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# **The Impact of Occupational Stress on Psychological Well-being in the Fire Service**

**Kanchana Wimalee Gunaratna**

**A thesis submitted to Middlesex University  
in accordance with the requirements of the degree of  
Doctor of Philosophy  
in the School of Health and Social Sciences,  
Department of Psychology**

**February 2009**

## **ABSTRACT**

The research aimed to examine the impact of occupational stress on psychological well-being in the Fire Service. In particular, the research examined the impact of occupational stress (Uplifts and Hassles) and individual differences (Neuroticism, Extraversion, Mastery and Coping) on work and context free well-being and Work Performance as part of a model based on the work of Cooper (1986) and Williams and Cooper (1998).

The research involved three stages, two of which were quantitative and the third qualitative. In stage one, cross sectional data was collected using a questionnaire from five samples (N=867). In stage two, data was collected at a second time point from two of these samples (i.e. longitudinal data, N=123). In stage three, semi structured interviews were conducted with six fire personnel taken from one of the longitudinal samples, and thematic analysis was conducted. The statistical analysis of the data was conducted via hierarchical multiple regression analyses. Path analyses were also conducted on both cross sectional and the longitudinal data. The quantitative results, in terms of work well-being and Work Performance suggested there was good well-being. However, the context free well-being measure indicated poor General mental health. Furthermore, stress and individual differences had important influences on work and context free well-being, as well as on Work Performance. Neuroticism and Mastery seemed to be particularly important for these Fire Service samples. This latter with respect to General mental health finding was supported by the qualitative research which suggested that Fire Service personnel were experiencing stress. The qualitative research also suggested possible interventions the Fire Service could put into practice to support its employees such as 'Coaching and mentoring' and 'Support from colleagues'.



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## **PREFACE**

There is relatively little research in the Fire services compared to other emergency services within the UK. The research in this thesis aims to address the impact of occupational stress on psychological well-being in the Fire Services. In doing this, the research aims to identify factors that affect individual and organizational outcomes and work related and context free well-being in the Fire Service, and also to contribute to the understanding of occupational stress by researching the specific influence of individual differences and Coping on the relationship between stressors and psychological well-being in the Fire Service. Furthermore, the research also aims to examine improvements and interventions that could be implemented to support Fire Service employees.

Mental health and stress is increasingly recognized to be an important issue for employers and employees, as well as society more generally (Cooper and Payne, 1988; Mackay et al., 2004). Reasons for this interest vary, but a common view is that stress arising from work conditions is pervasive and significant in its impact both on individual employees and on organisations in which they work (Cooper 1986). Research has consistently demonstrated links between stress and a variety of individual outcomes, including incidence of coronary heart disease, mental breakdown, poor health behaviour, family problems, accidents and some forms of cancer (e.g. Karesek and Theorell, 1990).

In addition to the dysfunctional impact that stress can have on individual health and well-being, research has also consistently demonstrated links between stress and a variety of outcomes, which potentially have a more direct impact on an organisation. For example, work place stress has been associated with; increased accidents, absenteeism and turnover (Ganster and Shoenbroeck, 1991; Rick et al., 2002; Mackay et al., 2004), impaired Work Performance and productivity (e.g. Cooper 1986), increase in worker complaints (Jones et al., 1988) and increased worker compensation claims. For example, the HSE have reported (cf The Health and Safety Executive Website):

“In 2007 Psychosocial Working Conditions (PWC) survey indicated that around 13.6% of all working individuals thought their job was very or extremely stressful. The annual incidence of work-related mental health problems in Britain in 2007, as estimated from The Health and Occupation Reporting network (THOR)

surveillance schemes OPRA (based on reports from occupational physicians) and SOSMI (based on reports from consultant psychiatrists), was approximately 5,750 new cases per year. Also, estimates from the Labour Force Survey (LFS) indicate that self-reported work-related stress, depression or anxiety accounted for an estimated 13.5 million lost working days in Britain in 2007/08”.

Thus, from an organisational perspective, it makes sound economic sense to reduce the adverse effects of stress (Newell, 1995), because the costs can be immense. In addition to these costs, organisations have a responsibility under health and safety law to assess and control the risks that their employees are exposed to at work. In the U.K., the move towards litigation trend due to stress started about 20 years ago.

Various researchers have attempted to export the general models of stress into the working environment (see Warr, 1987; 1994; Cox, 1993). Although models differ, they mainly take a transactional approach to the study of occupational stress, because they assume that stress results from a complex dynamic interaction between the individual and their environment. In the current research a model of stress based on Cooper’s (1986) and Williams and Cooper’s (1998) models of stress will be proposed. It will be used as a basis for investigating stress and well-being in Fire Service personnel.

In order to do this, Chapter One begins by firstly providing a definition of stress and it then describes the historical background to the development of contemporary stress models. This is then followed by addressing the impact of stress in an Occupational setting by looking at contemporary models of stress comprising of Warr’s (1987) Affective Well-being model, and Vitamin model (1987), Cooper’s (1986) and Williams and Cooper ‘s (1998) Model of Occupational Stress and Hart, Wearing and Headey’s Model of psychological stress and well-being (1995) are first described. This is then followed by the description of three more recent models of stress; The Model of Work Events and Unpleasant Affect (Daniels, Harris & Briner, 2004), The Job-Demand Resources Model of Burnout (Demerouti , Nachreiner, Bakker & Schaufeli, 2001) and a model that addresses Effects of Stress on Job Satisfaction, Propensity to Leave and Job Performance (Fried, Shirom, Gilboa & Cooper, 2008). Finally, Occupational stress research in the emergency services and specifically the Fire Service is described and evaluated.



Warr's (1987) Vitamin Model, Cooper's (1986) and Williams and Cooper's (1998) Model of Occupational Stress and Hart, Wearing and Headey (1995) Model of Psychological distress and well-being. Finally, Occupational stress research in the emergency services and specifically in the Fire Service is described and evaluated.

The second chapter begins by addressing methods of influence in the stress process i.e. Direct and Confounding, Moderation and Mediation effects. It then describes individual characteristics, which are divided into demographic and dispositional characteristics. The demographic characteristics (number of years of service and marital status) are described briefly. Then the three individual difference characteristics from the proposed model of stress, Neuroticism (Negative Affectivity), Extraversion (Positive affectivity) and Mastery (a measure of personal control) are described in more detail. For each, the research in the area is illustrated and then the rationale for using the particular measure in the current study is justified.

Chapter Three begins by addressing Coping by mentioning influential models of Coping including the Coping theory of Lazarus (1966; 1980; 1984) and the Occupational specific Coping theory of Cox (1981), it then extends to refer to the various issues related to measurement of Coping and giving the rationale for using the measures in the current study. Finally, the chapter closes with a review of Coping research from the Emergency service specific area.

Chapter Four draws together the limitations of the existing research and describes the rationale for the current research. A model of stress is proposed based upon the reviewed literature. This model and the research hypotheses accompanying it, as well as the broad aims of the quantitative and qualitative research that was conducted are stated.

Chapter Five describes the methodology for the quantitative part of the research. It outlines the target population, research design, description of Fire Service samples, details of the measures used in the questionnaire and the research procedure, which involved collectively cross sectional and longitudinal data.

Chapter Six reports the results of the cross sectional data analysis. It is divided into three main sections: Sample Descriptives, Correlational analysis and Multiple Regression. In each section, the results for all cross sectional Samples at Time One are reported. The data

analysis aims to examine the extent to which stress, Coping and individual differences have an effect on outcome measures of Job Satisfaction, Work psychological well-being, Work Performance and General mental health and the moderating effects of Coping and individual differences.

Chapter Seven reports the results of the longitudinal data analysis. It is divided into five main sections: The first section is Background information, which describes the current research, the rationale for the longitudinal research design, and the multivariate statistics used for this part of the study. The next section provides descriptive statistics. This is followed by a description of the Correlational Analysis, followed by the Hierarchical Multiple regression Analyses and finally the Path Analyses for the cross sectional and longitudinal data. Except for the Path analysis, the results for the repeated measures sample are reported in each section.

Chapter Eight reports the background, methodology and findings of the qualitative part of the research. It first addresses research in occupational stress using qualitative methods then specifically addresses the methodology used in the current study (Thematic Analysis). This is followed by the general method and methodological procedure used for the qualitative research, and the rationale for using Thematic Analysis. The researchers' reflexivity is addressed, followed by the Thematic procedure and finally findings of the analysis (the Themes) are reported.

Finally, Chapter Nine discusses the results of the Quantitative and Qualitative research. The chapter begins with a summary of the broad research findings, followed by the findings for each of the hypotheses. The chapter then proceeds to draw together all of the findings in order to address the broad research aims for both the Quantitative and Qualitative aspects of the research. It then compares the current proposed model of Occupational stress with existing models of stress. The chapter concludes with suggestions for possible interventions that the Fire Service could implement and recommendations for the Fire Service, a discussion of the limitations of the current research and proposed further research for the future.

In summary, the current research aims to address the 'Impact of occupational stress on psychological well-being in the Fire Services' by examining the impact of stress,



individual differences, Coping on work and context free well-being measures and Work Performance and by using quantitative and qualitative methods.

# **1**

## **CHAPTER ONE**

### **OCCUPATIONAL STRESS MODELS**

#### **1.1 OVERVIEW OF CHAPTER ONE**

Chapter One firstly provides a definition of stress and describes the historical background to the development of contemporary stress models. Secondly, contemporary and ‘more recent’ models relevant to Occupational stress are addressed. That is, in this section, the contemporary models comprising Warr’s (1987) Affective Well-being model, and Vitamin model (1987), Cooper’s (1986) and Williams and Cooper ‘s (1998) Model of Occupational Stress and Hart, Wearing and Headey’s Model of psychological stress and well-being (1995) are first described. This is then followed by the description of three more recent models of stress; The Model of Work Events and Unpleasant Affect (Daniels, Harris & Briner, 2004), The Job-Demand Resources Model of Burnout (Demerouti , Nachreiner, Bakker & Schaufeli, 2001) and a model that addresses Effects of Stress on Job Satisfaction, Propensity to Leave and Job Performance (Fried, Shirom, Gilboa & Cooper, 2008). Finally, Occupational stress research in the emergency services and specifically the Fire Service is described and evaluated.

The word stress is derived from the Latin word *stringere* meaning to draw tight. Stress has been defined and studied from many perspectives. Cannon’s (1914) Flight Fight Syndrome addressed it from a physiological approach, Symonds (1947) from a stimulus-based perspective, Selye (1956) from a response-based approach and (the contemporary view) as a transaction between the individual and the environment, as put forward by Lazarus (1966).

### **1.1.2 PHYSIOLOGICAL MODEL OF STRESS-(CANNON 1914, 1929, 1970)**

Cannon (1914) emphasised the association between psychological well-being and emotion through a physiological reaction. He suggested an individual would react to stress in two ways, as a fight or flight reaction driven by adrenaline. The first, Fight response (representing the fear reaction), involves trying to remove the stressor. The second, Flight response (representing anger), involves removing one self from the stressor. According to Cannon the process focuses on the body trying to maintain homeostasis (internal sense of balance). His theory was useful in enabling researchers to understand physiological changes that occur during times of stress and excitement and the process of homeostasis. However, it has been criticised as it has limited value in explaining the psychological processes that occur during a stressful encounter, which are the basis of contemporary stress theories.

### **1.1.3 THE STIMULUS-BASED MODELS OF STRESS (SYMONDS, 1947)**

The stimulus -based models attempt to explain the psychological stress process through physics/engineering analogies. Symonds (1947), supporting this view, suggests stress results from a stressor (an environmental stimuli or force) the individual is exposed to and the ability of the individual to 'tolerate' this and their 'resistance' capacity. This capacity is what governs the outcome of the stress experience and according to Symonds (1947) and Symonds and Williams (1947), beyond this crucial point permanent psychological and /or physiological detriment is inevitable. Other researchers such as Cohen and Lazarus (1979) suggest this view has some contribution in explaining 'situation-grounded' encounters where individuals may have specific and appropriate behaviour that may be adopted in response to common extreme situations. However, with respect to contemporary models of stress, many researchers such as Cohen and Lazarus (1979) suggest this model is limited as it assumes that stressors have identical effects upon different individuals and even upon the same individual at different times. That is, it takes no account of individual differences, psychological factors, such as prior experience, dispositional characteristics and cognitive behaviours (Lazarus, 1966; Lazarus and Folkman, 1984; Cooper and Payne, 1992).



#### **1.1.4 RESPONSE-BASED MODELS OF STRESS (SELYE 1956)**

The Response Based model of stress suggests that the important factor is the reaction response or outcomes of the stressor. One of the first attempts to explain stress scientifically and an influential model exemplifying this view is the General Adaptation Syndrome (GAS) put forward by Hans Selye (1956). This model suggests the primary aim is to maintain Homeostasis and this is achieved through adaptation to the environmental stimuli (stressor). According to Selye (1956), this process involves three stages. First, the Alarm Reaction that is when the individual is first exposed to the stressor; this consists of two phases; 'shock' (the initial reaction to the stressor characterised by changes in body temperature, blood pressure and respiration rates) and 'counter shock' (physiological changes at a hormonal level to counter act the shock). The next stage is the Resistance Reaction, where there is maximum adaptation to the stressor. According to Selye, during this, the alarm reaction will either improve or disappear or if the stressor continues and/or other stressors appear, the body's defences become less able to cope with the demands. The final stage is the Exhaustion Stage, where there is increased vulnerability and lack of reaction against the stressor. If exposure to the stressor continues, this could ultimately lead to death (Selye, 1956; 1975). These models are limited as they over emphasise the importance of the physiological reaction and do not take account of the importance of the psychological response to stress. That is, the influence of individual cognitions, and past experiences (Lazarus, 1966; McGrath, 1976). Furthermore, this model suggested similar physiological responses to all experiences of stress, but research since, indicates that the same stressor can have differing reactions within the same individual (Mason, 1971). Finally, Lacey (1967), studying extreme burns victims, showed that the three adaptation stages are not always relevant as individuals can pass directly to the exhaustion and death stage, thus indicating physiological reactions are not independent of each other as suggested by Selye (1956). However, the response-based models were influential in identifying the links between exposure to a stressful experience, and subsequent ill health through inability to maintain homeostasis. The ability to maintain homeostasis is vital for optimum psychological well-being (through individual cognitions and varying responses to stressors). This is a central concept in contemporary stress models (Lazarus, 1966; Cox, 1978; Warr, 1987).

### **1.1.5 TRANSACTIONAL MODELS OF STRESS (LAZARUS, 1966)**

The contemporary models of stress take a transactional approach and place emphasis on a psychological perspective. These models put the individual at the centre, and take account of the adaptive processes involved (supports, personal resources, external stimuli, internal values and cognitions) as the individual interacts to mediate the stress process. That is, they view stress as a continuous, reciprocal, adaptive process, taking account of both individual and environmental factors. One such influential model is Lazarus' (1966) Transactional Model of Stress.

This model emphasises the two way process between the individual's cognitive processes and the experience of stress. That is the transaction between the individual's personality characteristics, cognitions, values and external (environmental) demands, support and personal resources available. Lazarus (1981) describes this as 'a person-environment fit'. According to Lazarus (1966), it is the cognitive appraisal of the stressful experience that determines the subsequent Coping behaviour. He indicates two types of cognitive appraisal, Primary and Secondary appraisal. According to Lazarus (1966), Primary appraisal is the evaluation of the significance of a transaction (stressor) for the maintenance of well-being. The stressor is judged/appraised as irrelevant, benign-positive or stressful. Secondary appraisal is defined as cognitive activity used to evaluate the Coping resources and options available. The decision taken could be conscious or unconscious (Lazarus, 1981). In Lazarus' model, the importance of the Coping process is highlighted.

The Transactional view of stress was criticised for not emphasising the physiological effects of stress such as severe fatigue without any psychological influence (Cox, 1978). However, the Transactional perspective succeeded where the Stimulus and Response based models did not, as it emphasised the psychological perspective that is the importance of individual characteristics and cognitions in the stress process. Thus, circumstances were not labelled generically stressful. Instead, they took account of the interaction between the individual and their environment, and the influence of unique person specific factors. This approach underlies the current research also.



## **1.2 OCCUPATIONAL STRESS MODELS**

The next section will address the impact of Occupational stress, followed by addressing four contemporary Occupational stress models; Warr's Affective well-being model (1987, 1994), Warr's (1987, 1994) Vitamin Model, Cooper's (1986) and Williams and Cooper's (1998) Models of Occupational Stress and Hart, Wearing and Headey's (1993, 1994a) Model of Psychological Distress and well-being. This is then followed by the description of three more recent models of stress.

### **1.2.1 IMPACT OF OCCUPATIONAL STRESS**

In the last 20 years Occupational stress is a phenomenon that has gained much interest in organisations. It has its basis in legislations put forward by 'Health and Safety Executive'. Mental health and stress is increasingly recognised to be an important issue for employers and employees, as well as society more generally (Cooper and Payne 1988). Reasons for this interest vary, but a common view is that stress arising from work conditions is pervasive and significant in its impact on both individual employees and the organisations in which they work (Cooper 1986). Research has demonstrated links between stress and a variety of individual outcomes, including incidence of coronary heart disease, mental breakdown, poor health behaviour, family problems, accidents and some forms of cancer (e.g. Karesek and Theorell, 1990). In addition to the dysfunctional impact that stress may have on individual health and well-being, research has also demonstrated links between stress and a variety of outcomes, which potentially have a more direct impact on an organisation. Thus, from an organisational perspective it may be of economic benefit to reduce the adverse effects of stress (Newell, 1995), because the costs can be high. For example, cf: The Health and Safety Executive Website:

- “In 2007/08 an estimated 442 000 individuals in Britain, who worked in the last year, believed that they were experiencing work-related stress at a level that was making them ill, according to the Labour Force Survey (LFS).
- The 2007 Psychosocial Working Conditions (PWC) survey indicated that around 13.6% of all working individuals thought their job was very or extremely stressful.
- The annual incidence of work-related mental health problems in Britain in 2007, as estimated from The Health and Occupation Reporting network (THOR)

surveillance schemes OPRA (based on reports from occupational physicians) and SOSMI (based on reports from consultant psychiatrists), was approximately 5,750 new cases per year. However, this almost certainly underestimates the true incidence of these conditions in the British workforce.

- Estimates from the LFS indicate that self-reported work-related stress, depression or anxiety accounted for an estimated 13.5 million lost working days in Britain in 2007/08”.

In addition to costs such as those mentioned above, organisations have a responsibility under health and safety laws to assess exposure and control the risks that employees are under at work. Further support for the need for organisations to be proactive is verified by another survey by the HSE (2004/05) that indicated that approximately half a million cases of work related illnesses were stress related. An increasing failure by organisations to address stress and its related problems has resulted in an increasing number of employees litigating against their employers through worker compensation regulations and laws in respect to job related stress or ‘cumulative trauma’ (Karesek and Theorell,1990). Other research by Mackay et al. (2004) supports these findings and indicates that stress and stress related problems within the work environment have now been recognised at a global level for both employees and employers. Additionally researchers such as Jones et al. (2003) have reported an estimated average of 28.5 days off work per person per year through stress, depression or anxiety, and they estimate 1.3% of the UK population who have ever worked, believed these problems were due to or exacerbated by work. These studies support the need for research investigating Occupational stress.

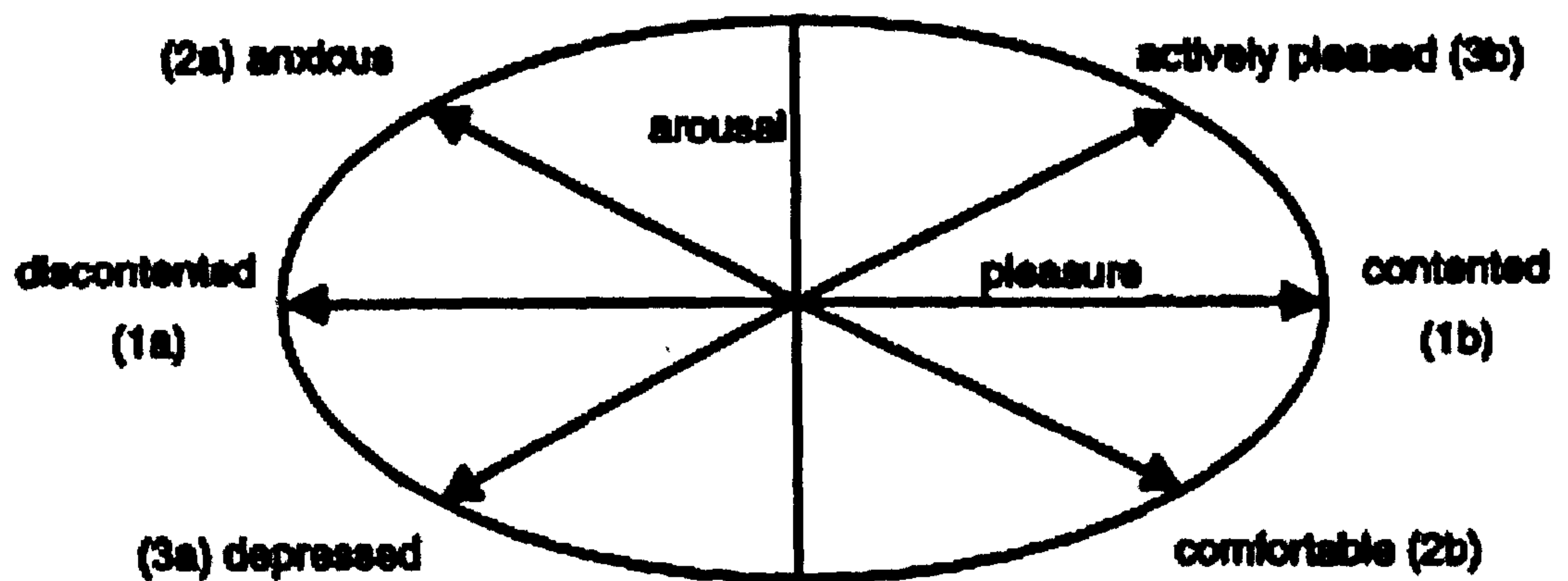
Two influential Occupational Stress Models that have been put forward to understand and explain stress in the work environment and that have much empirical evidence indicating their validity are Warr’s (1987, 1994) Affective Well-being Theory, and Cooper’s (1986) and Williams and Cooper’s (1998) Work Stress Models. Although these models differ, they approach the study of occupational stress, assuming that stress results from a complex dynamic interaction between the individual and their environment. However, for the current research the Hart et al. (1995) Model of Psychological Distress and Well-being and Vitamin Model of Warr (1987) are also mentioned as they also have elements relevant to the proposed model of stress in the current research. The more recent models are described to indicate the advancement in recent stress research and to examine how relevant they may be for the current research.



### **1.3 WARR'S (1987, 1994) AFFECTIVE WELL-BEING MODEL**

The Affective well-being model according to Warr (1987, 1994) is based on an individual's perception of their personal well-being. He purports five components of mental health, Affective well-being, Competence, Autonomy, Aspiration and Integrated functioning. Affective constructs addressed in Warr's (1987) research are well-being at work (job related well-being) and non-job related or context free well-being. He suggests a more complete understanding of an individual's well-being can be gained by addressing both of these constructs in relation to individual differences. In the current research, Aspiration and Competence have been used as outcome measures. in the proposed model of stress Please refer to Figure 1.3.

**Figure 1.3: Warr's (1987, 1994) Affective Well-being Model.**



This Affective Well-being model has at its roots the concepts of Pleasure and Arousal as a measure of affective well-being. Thus a particular level of pleasure may be accompanied by high or low levels of arousal, and high or low levels of arousal may be pleasurable or not pleasurable (Warr, 1990). He also suggests three indicators of affective well-being (displeased-pleased, anxious-contented and depressed-enthusiastic) need to be considered as principal types of affect that may be located anywhere along these axes (Warr, 1990). Additionally, Warr indicates that high or low mental health can be expressed behaviourally in transactions with the environment. That is, behaviour is governed by the personality characteristics of an individual, and these influence the interaction between that individual and the environment. Two behavioural components that Warr (1987) puts forward are Competence and Aspiration. According to Warr (1990), 'a competent person is one who has adequate psychological resources to deal with experienced difficulties'. Warr (1990) defined a person with high Aspiration 'as a mentally healthy person, viewed as having an interest in, and engaging with the environment. He or she establishes goals and makes active efforts to attain them through motivated behaviour, alertness to new opportunities and efforts to meet challenge that are personally significant. Conversely, low levels of Aspiration are exhibited in reduced involvement and activity, and in an acceptance of present conditions even when they are unsatisfactory'. Warr (1990) found significant associations between occupation level, age and job characteristics and affective well-being.

In all measurements of mental health well-being, both context specific (job related) and context free well-being need to be addressed according to Warr (1990). 'Job specific' well-being refers to peoples feelings about themselves in relation to their job. 'Context free'



well-being has a broader focus, covering feelings in any setting. Warr (1990) research found greater employee well-being was significantly associated with better job performance, lower absenteeism and turnover of staff and more discretionary work behaviours( for example, voluntary overtime and helping colleagues).

This model is relevant because the current research utilises the concepts of Competence and Aspiration as outcome measures.

### 1.3.1 WARR'S (1987, 1994) VITAMIN MODEL

Warr (1987) also suggested there are nine environmental features, which could influence well being, and mental health through the axes described earlier. These were opportunity for control, opportunity for skill use, goals and task demands variety, environmental clarity, availability of money, physical security opportunity for interpersonal contact and valued social position. In considering the precise relationship between the principle environmental features and mental health and well-being, Warr developed a vitamin model.

Warr's (1987) Vitamin Model (VM) suggests there is a non -linear relationship between job characteristics and mental health outcomes including employee well- being. According to the VM, environmental psychological features such as job characteristics affect mental health. These job features have an effect, which is non- linear, and is analogous to the way intake of vitamins are supposed to have an effect on our health. The VM also suggests that the nine categories of job characteristics relate differently with mental health depending on the type of 'vitamin' they represent.

Described below are the nine main job elements or stressors, which influence an individual's well-being at work. These influence both job related (context specific) and context free (i.e. general) mental health. Please see figure 1.3.1.

According to Warr (1987) the elements or stressors are:

**Opportunity for control:** this refers to the degree of control an individual has over the contents, timing and pace of work. This has a significant effect upon an individual's well-being. Warr and others (for example Murphy et al., 1992) have found that a low level of



control at work is psychologically harmful (for example resulting in symptoms such as anxiety and depression) and a greater amount of control is associated with increased levels of well-being.

**Opportunity for skill use:** this refers to the degree to which the job allows current skills to be developed and the opportunity to acquire new skills. Researchers such as O'Brien (1984) have found limited opportunity to use or acquire skills in the job, is associated with impaired levels of anxiety, hostility and self-esteem.

**Externally generated goals:** this refers to job, task and attentional demands, demands relative to resources, quantitative or qualitative workload, role responsibility, conflicting demands, role conflict and work-family conflict.

**Variety:** this refers to skill and task variety, variation in job content and location and non-repetitive work. Warr (1987) suggests there is a direct relationship between low Job Satisfaction and highly repetitive work.

**Environmental Clarity:** this refers to the ability of the individual to understand their work environment and to a certain extent predict future adverse events. It incorporates information about the consequences of behaviour, required behaviour, the future, task feedback, absence of job future ambiguity, job insecurity and low role ambiguity.

**Availability of money:** this refers to income level, amount of pay and financial resources. That is, Warr (1987) suggests a lower level of income than that of comparative colleagues is associated with impaired levels of mental well-being.

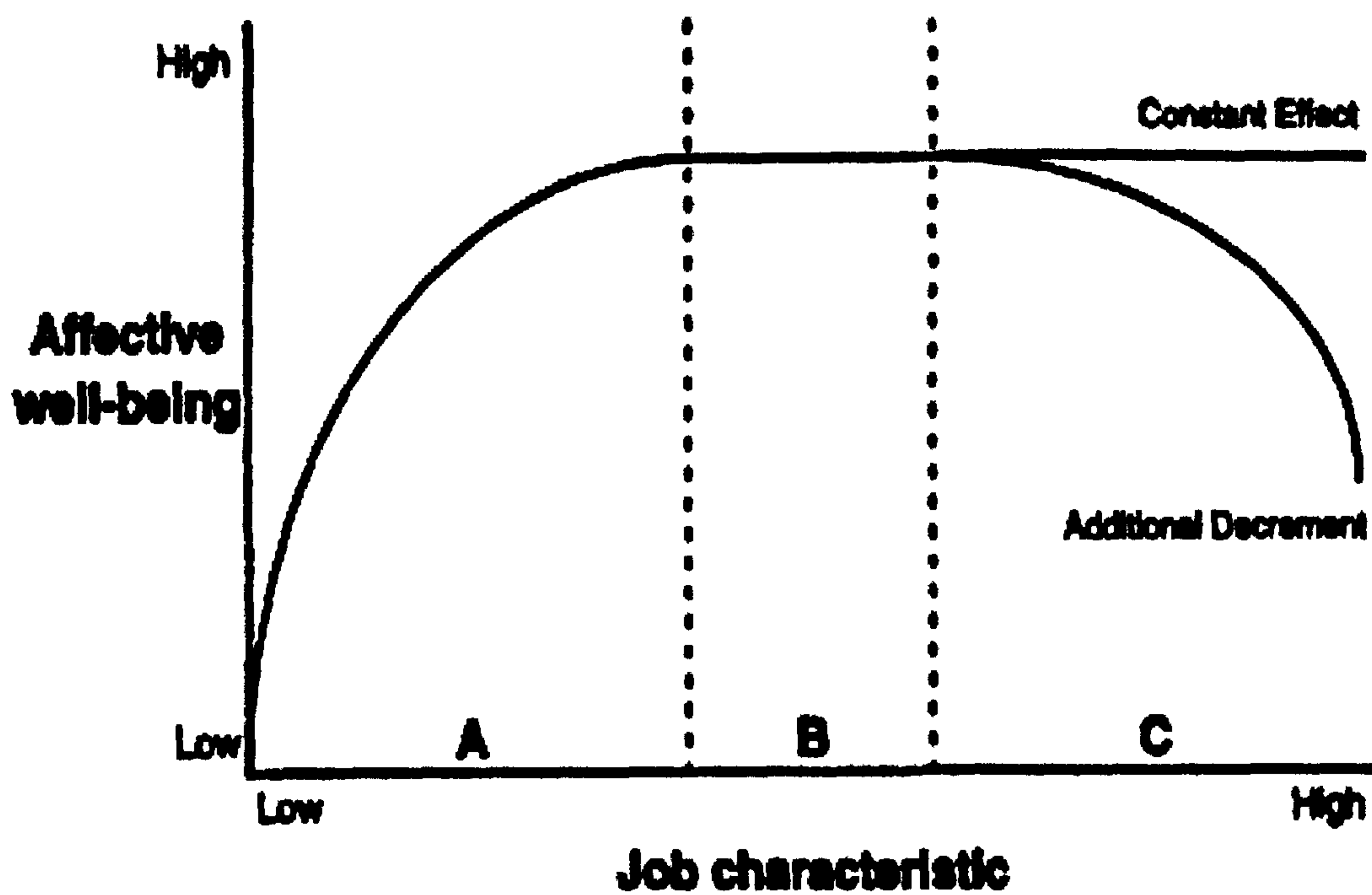
**Physical security:** this refers to the suitability of the individual's working environment. That is, good working conditions such as safe levels of temperature and noise, ergonomically adequate equipment and absence of danger.

**Opportunity for interpersonal contact:** this refers to contact with others including the quality of that interaction, social density, adequate privacy, social support and good communication. Research in this area has indicated that 'positive, friendly interpersonal relationships within the working environment are associated with positive individual well-being' (Billings and Moos, 1982).

**Valued social position:** this refers to the wider evaluation of the job’s status in society, occupational prestige, social rank, and personal evaluation of task significance, meaningfulness of job and self- respect from job.

Warr’s (1987) VM postulates that the impact of these stressors is analogous to the way vitamins have an effect on our body; lack of vitamins can result in vitamin deficiency which could lead to physical ill health (‘deficiency disease’).To combat this, vitamin intake will initially improve health and physical functioning, but after a particular point there will be no further observable improvement. If vitamin intake is continued one of two effects could result. The first is called ‘constant effect’ this is when there is neither an improvement nor noxious effect in the individuals’ physical health. According to Warr (1987, 1994), this is the same as the effect vitamins C and E have an on individual’s body. Thus, Warr uses CE (‘Constant Effect’), to express this relationship. Second are the consequences of vitamin overdose, which could lead to toxic levels in the body and cause poor functioning and ill health. Among others, vitamins A and D are known to be toxic when taken in large quantities. Thus, Warr has used the labels AD (‘Additional Decrement’) to denote the inverted U-shaped curvilinear relationship as shown by Figure 1.3.1

**Figure 1.3.1: Warr’s (1987) Vitamin Model**





Warr suggests that the relationship between job characteristics and mental health is paralleled by the way vitamins have an effect on the human body. Thus, a parallel can be drawn between Warr's vitamins as 'work vitamins'. Warr (1987) expresses this with respect to job characteristics in the following way. The presence of certain job characteristics will initially have a beneficial effect on an employee (for example work stress), whereas a lack of this may impair mental health (segment A). However, after a certain point the required level of vitamin has no positive effect, i.e. it reaches a plateau and the level of mental health remains constant (segment B). A further increase of the job characteristic (work stress) (segment C) may either produce a constant effect (analogous to vitamins C and E) or may be harmful and impair mental health (analogous to vitamins A and D). The type of effect depends on the type of job characteristic being considered. Warr (1994) maintains that the curvilinear AD pattern is likely to vary across different kinds of mental health outcomes. The VM suggests that job characteristics influence mental health, rather than the reverse process. For example, a high degree of job autonomy follows the AD pattern or inverted U shape, as this may entail uncertainty, high levels of responsibility and decision-making, this could have potentially detrimental effects on the employee's mental health.

This model is relevant to the current research as there are elements in this model such as 'Opportunity for control' and 'Opportunity for interpersonal contact', which are relevant to Warr, (1990) Job Satisfaction measure used in the current research.

### **1.3.2 EVALUATION OF WARR (1987, 1994) MODEL:**

Warr (1994), suggests that various components of mental health such as Competence, Aspiration, autonomy and integrated functioning can, and should ideally, also be measured in terms of context-free and context-specific environments (for further details see Warr, 1994, page 85). Therefore, to investigate the implications from both of these two environments within one piece of research is strongly suggested.

Warr also builds and elaborates upon the Vitamin model. For example: Warr (1994) states with respect to the concept of mental health, particularly the component labelled affective well-being, a differentiation between context-free and context-specific (job related) affective well-being should be made and emphasizes that both components have a large



degree of influence upon individual well-being. In addition, Warr (1987) acknowledges that individual differences act together with the Vitamins that can become toxic (that is, objective properties of the environment or subjective properties of the individual) to facilitate or constrain well-being and mental health. That is, with regards an individual's baseline level of well-being, he suggests that individuals vary in their typical affective tone. For example, a person's level of negative affectivity or neuroticism represents a continuing level of affect from which job-determined deviations occur (Roskies et al., 1993). Thus, a correlation between a job feature and well-being will include the person's baseline affective tone and impact of environmental features and may not represent a pure response to the current circumstances (Warr, 1994). This conclusion highlights two important issues surrounding individual differences and stress. Firstly, it is important to disentangle affectivity from baseline mental health in order to assess the true impact that environmental features are having on individual outcomes. Secondly, it is important to conduct repeated measures or longitudinal research in order to account for baseline levels of well-being prior to examining the influence that stressors have on strain outcomes. However, Warr does not indicate the exact nature of their effect. For example, do they have an individual influence or combine to have an interactive effect? Additionally, Warr does not specify the extent to which individual differences may moderate the impact of toxic vitamins and whether or not coping strategies interact with individual differences in this process. Warr's model also proposes that features in the environment cause mental health outcomes. However, several researchers (Spector et al., 1988; Parkes, 1994) have suggested that individual differences could precede the vitamins and thus ones perception of them. Warr's model is also more organisational in a context specific domain than occupational. Therefore, it does not specify details about the exact nature by which individual differences and coping interact to mediate the impact that the environment has on mental health. Research (Howarth & Patterson, 1995) suggests that different patterns of vitamins are important for different aspects of well-being in different occupations.

Finally, a finding by Sevestos et al. (1992) is contrary with respect to the two axes for measurement of affective well-being put forward by Warr. Their evidence supports that contented, cheerful and uneasy load onto different axes than Warr suggests. It advocates contented belongs to depression-enthusiasm as it loaded more highly onto this factor and that cheerful and uneasy overlap between the two axes rather than belonging to one or the other. They also suggested including additional states of motivated, anxious and comfortable.



A degree of general support exists within the literature for the nine components of Warr's Vitamin model. For example, a number of authors have investigated Opportunity for interpersonal contact. The findings generally indicate that positive, friendly interpersonal relationships within the working environment do appear to be significantly associated with positive individual well-being (for example, Oldham and Brass, 1979; Billings and Moos, 1982). With regards Environmental clarity (the fifth element), this is the ability of the individual to understand his/her working environment and to be able to predict to some extent future adverse occurrences. This item may also be known as role ambiguity (Kahn et al., 1964). High levels of role ambiguity have been significantly associated with low levels of job-related mental health (for example, Billings and Moos, 1982).

However, there are criticisms of the model, for example: with respect to the question of causality. Whilst Warr's model ascertains causal pathways between job characteristics and mental health, no indication of any reciprocal nature of these pathways is attempted.

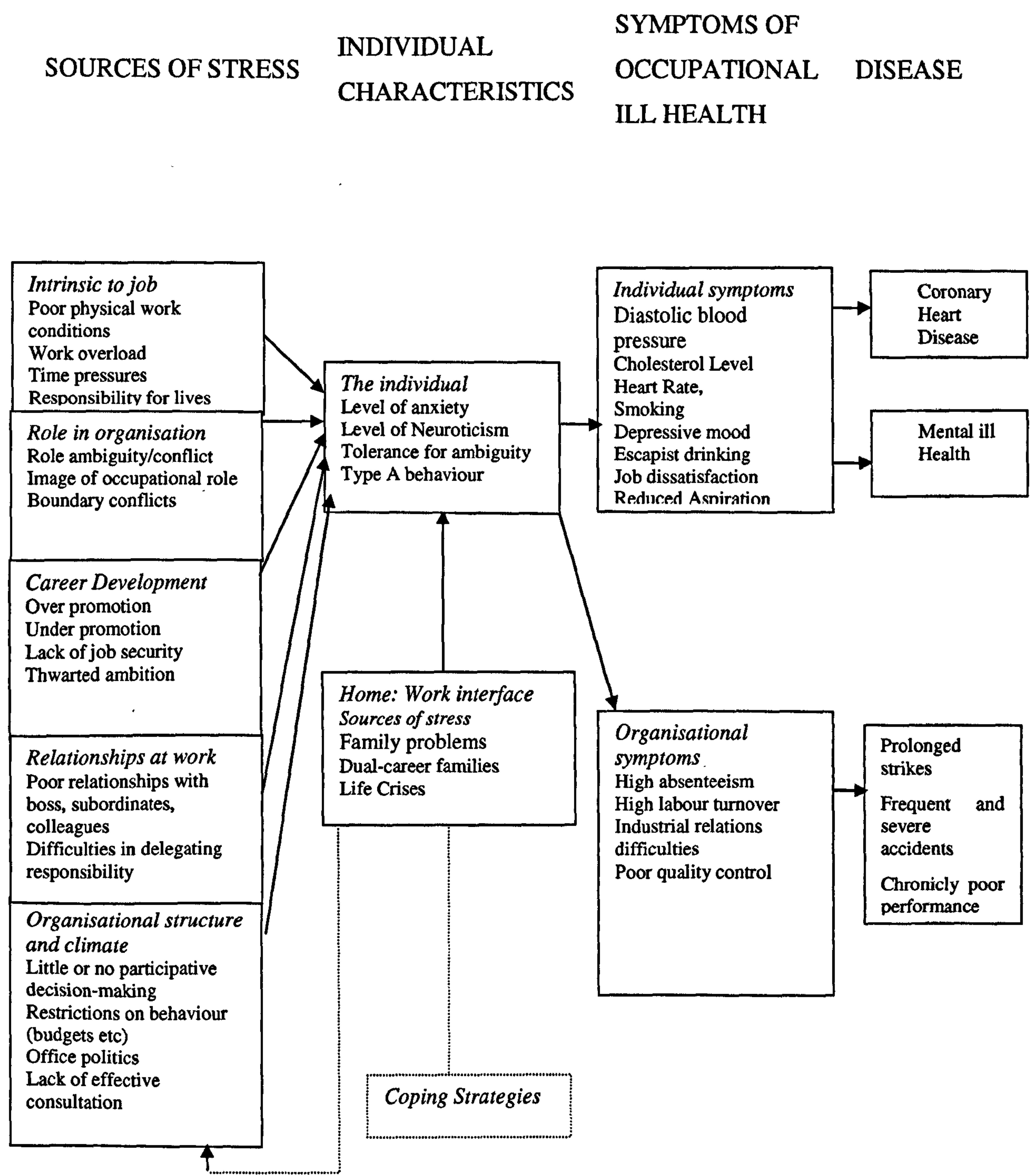
A number of studies have also provided some evidence indicating that certain individual characteristics, including well-being, appear to affect some occupational features (for example: Kohn and Schooler, 1982; James and Tetrick, 1986). Also, the causal pathways between job-related and non-job mental well-being is not specifically identified within Warr's model. However, Warr's subsequent investigations do suggest that job-related mental health appears to act as a mediating factor between job characteristics and non-job mental health (Warr, 1994). Warr's (1987) Vitamin model, despite certain limitations, does appear to provide an adequate basis for occupational stress research. In particular, the model is somewhat more wide reaching than comparable models, being able for instance, to explore both the positive and negative aspects of work characteristics (for example Hart et al., 1993; 1995). Warr's model is also advantageous in emphasizing the multi-component construction of both individual mental health and occupational stress. Thus, the model allows certain job features to be linked with particular aspects of mental health (for example, job demands and Job Satisfaction, Parkes and Von Rabenau, 1993). Finally, the model also allows for the measurement of any changes occurring over time within the nine principal components.

The next section describes another influential model of Occupational Stress, Cooper's (1986) Work Stress Model. This Transactional model focuses on identifying the major

sources of stress in the work place taking account of the influence of individual differences.

### 1.4 COOPER’S MODEL OF STRESS AT WORK

Figure 1.4 Cooper’s (1986) Model of Work Stress





Cooper's (1986) Transactional Work Stress Model (Figure (3)), is an influential model of Occupational stress. This model attempts to understand the stress process, so that effective interventions can be adopted to combat Organizational stress.

Based on the Transactional approach to stress, Cooper, Sloan and Williams (1988) developed the Occupational Stress Indicator (OSI) to measure the main factors in the stress process. Thus, the Cooper model is one of the few stress models that has a measure that could be used to evaluate the model. It consists of six questionnaires with 28 subscales. The six areas are Job Satisfaction, mental and physical health, sources of pressure (all having consistent alpha coefficients, Robertson, Cooper and Williams, 1990). But the remaining three, Type A behaviour, Locus of control, and Coping strategies had lower reliability alpha coefficients. Overall, the subscales had alpha coefficients ranging from 0.03 to 0.92 (Williams and Cooper, 1998).

The model is divided into four stages or levels. The first stage identifies the '**Sources of stress at Work**', which is divided into five main factors. These factors are **Intrinsic to the job**: for example, poor physical working conditions, work overload, time pressure, responsibility for lives; **Role in the Organisation**: for example, role ambiguity/conflict, image of occupational role, boundary conflict; **Role Career development**: for example, over promotion, under promotion, lack of job security, thwarted ambition; **Relationships at work**: for example, poor relations with boss, subordinates or colleagues, difficulties in delegating responsibility and **Organizational structure and climate**: little or no participation in decision making, restrictions on behaviour (budgets etc), office politics, lack of effective consultation.

The second stage identifies individual difference factors that influence the experience of the stress process; this stage is called **Individual Characteristics**. It is divided into two; **Individual factors**, for example, an individual's level of anxiety, Neuroticism, tolerance for ambiguity and Type a behaviour, and **Home -Work Interface**, for example, family problems, dual career marriages, life crisis. In addition, the influence of Coping on the stress in the process is considered.

The third stage identifies the **Symptoms of Occupational Ill-Health**. This also consists of two categories, **Individual Symptoms**, such as heart rate, cholesterol level, smoking

habits, drinking habits and **Organisational Symptoms**, such as high absenteeism, high labour turnover and industrial relations.

The Fourth stage identifies Outcomes or **Disease** resulting from exposure to sufficient Occupational stress. These outcomes can also be viewed with respect to **Individual and Organisational characteristics**. Examples of Individual characteristics are coronary heart disease and mental ill health. Examples of Organisational characteristics are prolonged strikes, poor performance levels and frequent work related accidents.

#### **1.4.1 EVALUATION OF COOPER'S (1986) OCCUPATIONAL STRESS MODEL:**

In Lazarus and Folkman's transactional model of stress (1982), there are several feedback loops (which determine whether or not coping attempts have been successful, which in turn have implications for future appraisal of stimuli). They indicate how a stressor in the environment may result in strain depending on the complex interactions between the individual and the environment. However, the Cooper model does not show and does not account for such loops and the stress process is shown as a simple left to right process.

Another criticism can be that the model could be viewed more as a model of organisational stress than occupational stress as it is more limited in specifying factors when it comes to occupational stressors specific to an actual job. This is evident from the 'Sources stress' in the model, only the category 'intrinsic to the job' is specific to the occupation, all the others are generic to the organisation than the occupation. Several researchers including Cooper have noted this and have tailored the measurement of stressors to the particular occupation under study. For example, Cooper and Bramwell (1992) assessed mental health, satisfaction and sickness absence in a comparative group of managers and shop floor workers in the brewing industry. Sources of stress specific to the brewing industry were established through a series of interviews with the employees.

Other research has criticised the model, as it does not show how individual differences can act at several points of the stress process. For example, Parkes (1994) noted that individual differences could precede sources of stress, as individual differences in personality and coping play a major role in the process by which work conditions influence mental and physical health outcomes (this is also supported by Cooper and Baglioni, 1988). Thus, it is possible that these characteristics influence ones job selection and thus the types of



stressors one is exposed to. In addition, Spector, Dwyer and Jex (1988) have suggested that job conditions may not always be a causal factor in stress outcomes. They suggested that three equally plausible models could explain the stress process. These are the reverse causality model, which states that affective reactions to the stress outcome cause the perception of the job characteristics, the reciprocal causation model that states that stress outcomes are both cause and effect of perceived job characteristics and the external cause model, which states that dispositions cause the perception of the stressor and the outcome. Thus although there is much support for the view that the environment has an influence on perception which causes outcomes, these other views should not be out ruled.

Other criticisms are that the Cooper model fails to account for organisational characteristics as moderators of the stressor strain relationship and does not indicate whether coping and personality has direct influences on stress outcomes or combine to have an interactive influence. Furthermore, although Cooper has attempted to incorporate individual differences into the model, further evidence is required to establish whether these individual difference variables have a direct effect or moderate strain outcomes. For example, Kobasa, Maddi and Zola (1983) have found moderating effects for hardiness; however, Manning, Williams and Wolfe (1988) have found direct effects.

Despite these criticisms, researchers have examined the model at various levels and there is much support for the basic concepts of the Cooper model and thus it has been extended and adapted by various researchers throughout the years. For example, (Cooper and Baglioni, 1988; Robertson, Cooper, and Williams, 1990), in 1990 Robertson et al. introduced coping strategies into the model as another aspect of individual differences. The new model proposed that 'when people are subject to sources of stress or pressure, they may react in different ways..., with individual differences in personality and coping acting either as moderators of the stressor strain relationship or exerting a direct effect on both individual and organisational outcomes'.

Further support for the model comes from the fact that despite several features of the work environment have been associated with stress, Cooper and Marshall (1976) developed one of the earliest classification systems which is still extensively used today (Newell 1995). There are six sources of stress in the model and the majority of the findings have been in the identification of the sources of stress. For example, Cooper and Kelly (1981) identified physical working conditions (such as noise, fumes and heat) as sources of stress in a steel



manufacturing plant. Guppy and Gutteridge (1991) identified interpersonal conflict and lack of resources as sources of stress in a population of general hospital nursing staff. Other evidence for physical work environment comes from the World Health Organisation (1983) for example, who described the 'sick building syndrome' as resulting in fatigue and headaches etc. The second, third, fourth and fifth categories (role in the organisation, relationships at work, career development, organisational structure and climate) are tied directly to the organisation. Role in the organisation includes three potential sources of stress, namely, role ambiguity, role conflict and responsibility for others. Such factors have been found to have negative effects on well-being because they induce uncertainty, which is in itself psychologically uncomfortable and if persistent can lead to psychological distress (O'Driscoll and Cooper, 1996). Relationships at work have been found to be both a source of stress and reduce the impact of strain. Strong support from peers has been found to relieve job strain whereas mistrust of co-workers is associated with poor psychological well-being (French and Caplan, 1970). Although career development has been less explored as a source of pressure, factors such as job insecurity can also result in strain outcomes because not only does it affect current and future income, but it also challenges people's self-esteem (Cartwright and Cooper, 1992). Organisational structure and climate such as office politics and poor communication (Cartwright et al., 1993) can also act as major sources of stress. Finally, the fifth category (home/work interface) relates to factors outside the work environment: extra organisational sources of pressure, including family and financial difficulties, conflict between work demands and outside commitments. Other researchers have examined the existence of this, for example, the influence of the home-work interface mediating effects of individual differences (Carver et al., 1989; Newton, 1989) and Davidson and Cooper (1993) reported that dual roles could be a great source of strain.

There is also evidence for individual differences in the model. For example; the model accounts for the fact that stress is not only inherent in the situation (McMichael, 1978), but is determined by whether or not the person perceives and appraises it as threatening and has sufficient coping strategies in order to deal with the threat. Individual differences in personality include Type A. People classified as Type A show high levels of competitiveness, and time urgency. Type A individuals are more likely to report higher levels of strain and experience the negative effects of job demands than individuals characterised as Type B (Ganster and Shaubroeck, 1991). Evidence comes from Kirmeyer and Briggs (1988) who studied civilian dispatchers working in a police department. They



found that those scoring higher on Type A were more likely to initiate, engage in and complete more work and thus potentially put themselves under stress.

There is also evidence for 'Symptoms of ill health' (both organisational and individual), as indicated by Cooper (1986). That is researchers such as Steptoe and Vogele (1992) and Valentiner et al. (1994) have shown there are relationships between stressors and ill health. There is also some evidence for the 'Outcome' stage of the model, although (Disease) measures as specified by Cooper (1986) have been investigated far less, and where there has been research, there is a discrepancy between what is classified as an outcome measure. For example, Parkes (1989) and Marmot et al. (1993) classify absenteeism, turnover and individual physiological ill health as outcome measures rather than symptoms of ill-health as specified by Cooper (1986). It has been suggested that this may be due to a limited number of longitudinal studies in this area (Zapf et al., 1996; Wanberg et al., 1997). Although further research is required, overall, research supports Cooper's (1986) model, verifying that prolonged exposure to sources of Occupational stress has significant detrimental effects (for example, for mental and physiological health) on individuals (Moyle, 1997).

Overall, there is evidence for the conceptual basis of the Model also. Organisationally the model is supported by the evidence and has several positive features. For example, the model incorporates the four main components of the stress process; sources of stress, individual differences in personality, coping strategies and outcomes. The conceptual basis for the model also follows transactional approaches to stress, (although this is not illustrated graphically) such as Lazarus who viewed stress as resulting from a dynamic interaction between the individual and their environment. The model is good on outcomes. Research suggests that stress can result in a variety of individual and organisational outcomes such as poor well-being and mental health and increased turnover. In addition, the model has formed the theoretical basis for one of the most popular instruments for assessing stress in the workplace called the Occupational Stress Indicator (Cooper, Sloan, and Williams, 1988)

The OSI (Cooper et al., 1988) which is based on the Cooper model of work stress has been used widely in Occupational stress research and with various Occupational groups in the UK. For example, with Police officers (Biggam, Power, and Mc Donald, 1997; Kirkaldy, Furnham, and Cooper, 1994); Occupational therapists (Rees and Smith, 1991); Public

sector staff in organisations (Leong, Furnham, and Cooper, 1996); Civil servants (Bogg and Cooper, 1995); Managers (Robertson, Cooper, and Williams, 1990); Social service staff (Bradley and Sutherland, 1995); and for stress audits in the NHS (Doherty and Tyson, 1998).

The OSI has also been used cross culturally; with clinical nurses in Taiwan (Lu Shiau and Cooper, 1997); Australian business and professional women (Langan-Fox and Poole, 1995); Portuguese professional women, (Tharakan, 1992); Brazilian white collar workers (Moraes, Swan and Cooper, 1993) and Iranian and UK managers (Spector, Cooper, and Aguilar-Vafaie, 1994).

As most of the studies have used the OSI as the research tool, the limitations of the OSI underlie the research findings as will be described. Firstly, many studies have indicated flaws in the OSI such as the locus of control and Type A scales having low reliability and construct validity (Khan and Cooper, 1991). Secondly, there have been criticisms regarding using the OSI to operationalise the model. Lyne et al. (2000) indicate that labelling mental and physical ill health and Job Satisfaction measures as stress effects is misleading as these variables are determined by factors other than occupational stress, such as demographics, health behaviours, genetic predisposition, personality, personal goals and life outside of work. These researchers also suggest that this questions what occupational stress is and whether the OSI operationalises it, whether Occupational stress can be operationalised by the sources of pressure questionnaire or the combination of sources of pressure questionnaire and moderating variables specified in the model. Other researchers such as Lazarus and Folkman (1984) questioned whether occupational stress is simply a label that summarises the idea of work related pressures affecting health.

Thirdly, Schafer and Fals-Stewart (1991) suggest that self-report measures of stressors and outcomes are frequently confounded and overlapping. For example the OSI Job Satisfaction and sources of pressure questionnaire, although having differing response keys (one emphasising satisfaction, the other, degree of pressure), both have items addressing workload, salary, relationships at work, career prospects, style of management and communication, thus leading to questionable findings. They suggest this may also be relevant with respect to home/work subscales between the sources of pressures scale and Coping questionnaire.

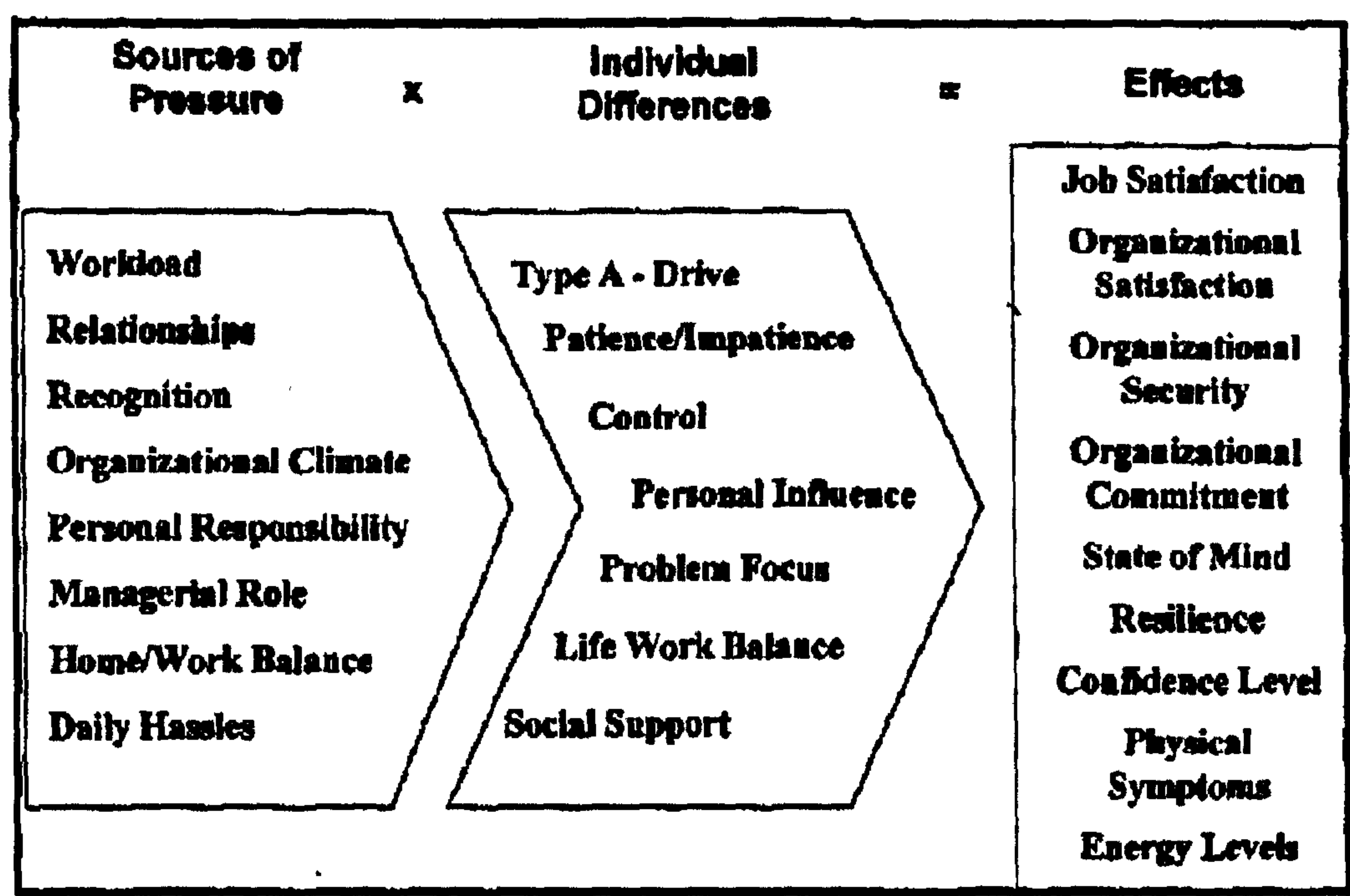


Fourthly according to Watson, Pennebaker, and Folger (1987), as the OSI relies on self report responses, this can inflate the cause and effect relationships by common method variance, or shared variance with a third variable such as negative affect. This confounding effect would also be applicable when using the OSI to measure the interaction between Coping and sources of pressure, that is, the moderating effects of Coping may be underestimated (Lyne et al., 2000). Thus, it is important to include objective measures (Frese, 1985; Frese and Zapf, 1988).

Finally, the majority of the research applying the Cooper model has been cross-sectional, thus no causal relationships can be assumed. Thus, Zapf, Dorman, and Frese (1996) suggest longitudinal studies should be employed.

To overcome these limitations Williams and Cooper (1998) developed the Pressure Management Indicator (PMI). The PMI was based on Williams and Cooper's (1998) revised model of stress at work (Fig 1.4.1) and is also derived from the Occupational Stress Indicator (OSI). This model is a simplified version of the Cooper (1986) model. It categorises a range of variables thought to be influential in the stress process into three Categories, Sources of pressure, Individual differences and Effects. Please see diagram in figure 1.4.1.

**Figure 1.4.1 The model of Stress by Williams and Cooper (1998)**  
 (Figure taken from Williams and Cooper (1998)).



According to Williams and Cooper’s (1998) model, the Sources of Pressure interact, with the Individual differences to produce the Effects.

The PMI is much shorter, and has been found to be more reliable and comprehensive than the OSI (Cooper and Williams, 1999). It gives measures of Job Satisfaction, physical and mental well-being, sources of pressure, personality and Coping.

Both Cooper’s Model of Occupational stress (1986) and Warr’s Model of Affective well-being (1987, 1994) identify that external factors have a significant influence on well-being. Sources of stress identified by both models are similar; that is poor physical working conditions, workload, role ambiguity, opportunity for skill use and interpersonal relations are listed.

The current research is based on the models of Cooper (1986) and Williams and Cooper (1998). Thus, the current proposed model incorporates Stressors, which are equivalent to the ‘sources of pressure’, the moderators/mediators, which are equivalent to the individual differences and Effects, which are equivalent to the outcomes (that is, both individual and organisational outcomes are included).



Furthermore, the current research uses the Hart et al. (1993, 1994a) Daily Uplifts and Daily Hassles scale questionnaire, (which has been adapted and made bespoke to the Fire Service). Thus, the model of Psychological Distress and well-being developed by Hart et al. (1993) in the police service is also relevant. This will be described in the next section.

### **1.5 HART, WEARING AND HEADEY' S (1995) MODEL OF PSYCHOLOGICAL DISTRESS AND WELL-BEING.**

This model was put forward to understand and determine Psychological Well-being (Perceived Police quality of life/Subjective well-being) in the Police service. It draws on the Dynamic Equilibrium theory of stress as proposed by Hart, Wearing, and Headey (1993; 1995). The Dynamic Equilibrium theory according Hart (1999) can be applied to the work or non-work environments of a person's life. It can be used to explain how positive (beneficial to well-being) and negative (harmful to well-being) experiences contribute to psychological well-being. According to Hart (1999), The Dynamic Equilibrium Theory of stress suggests that stress results from a range of variables that include personality characteristics (e.g. Costa and McCrae, 1980), environmental characteristics (Michela, Lukaszewski, & Allegrante, 1995), Coping processes (e.g. Bolger, 1990), positive and negative experiences (Hart, 1994), and various indexes of psychological well-being (George, 1999). This view is also in agreement with Lazarus (1990b), that stress does not exist in only one of these variables, but that stress occurs when a state of disequilibrium exists within the system of variables relating people to their environments. That is, providing that this state of disequilibrium brings about change in people's normal (equilibrium) levels of psychological well-being (Hart, 1996).

Thus the model put forward by Hart et al. (1995), (shown in Figure 5) supports the view that a dynamic relationship exists between Coping processes and subjective appraisal of life events. It also confirms Lazarus' assertion that retrospective reporting of Uplifts and Hassles occurs after attempts have been made to manage or cope with the environmental demands that give rise to them. According to the model, psychological distress and well-being are determined by two separate but independent (negative and positive affectivity) paths. The negative affectivity path was strongly influenced by Neuroticism, which directly effected the use of emotion focused Coping, experience of Hassles and levels of psychological distress. The positive affectivity path was influenced by Extraversion,



although not to the same extent that Neuroticism influenced the negative affectivity path. Extraversion directly effects the use of problem focussed Coping, experience of Uplifts and higher levels of well-being.

According to Hart (1999) (drawing on much empirical work of other researchers), there is evidence for positive and negative affectivity paths underlying the relationship between stable (trait) and situational (state) variables. For example, different patterns of associations were found to exist, with Neuroticism correlating more strongly with negative life experiences, emotion focused Coping and indexes of psychological distress (e.g. negative affect). Whereas Extraversion correlated more strongly with positive experiences, problem focussed Coping and measures of well-being (e.g. positive affect). These findings imply that Neuroticism and Extraversion are important in determining how people react and respond to their environment. Furthermore, as Neuroticism and Extraversion are stable over a long time period (Costa and McCrae, 1985), they are thought to exhibit a degree of temporal stability that can be predicted on the basis of a person's personality characteristics (Headey & Wearing, 1989). This entails, according to Hart (1999), that each of these constructs has a stable (equilibrium) and situational (change from equilibrium) component.

In addition, Hart et al. (1995) findings indicate that the use of problem focused Coping contributed to greater police Uplifts and police Uplifts in turn contributed to higher levels of well-being. That is, when police officers attempt to cope with stressful work experiences by managing or dealing with their emotional response, the likely result is an increase in work Hassles. When they attempt to cope by managing or dealing directly with the stressful event, they are more likely to experience work Uplifts. The results suggest they use both strategies to varying degrees. The personality characteristics of Neuroticism and Extraversion were the strongest determinant of psychological distress and well-being. This was followed by Hassles and Uplifts and finally emotion and problem focused Coping. Personality characteristics and Coping strategies according to Hart et al. (1995) play an important role in determining Hassles and Uplifts reported by police officers.

The Hart et al. (1995) model also suggests that police officers' use of Coping strategies was more likely to influence their psychological well-being through police Hassles and Uplifts than to have a direct effect. Also, like previous studies (e.g., Headey and Wearing, 1990) findings suggest that emotion focused strategies were maladaptive; whereas problem



focused strategies were adaptive. Thus Hart et al. (1995) results suggest police officers use both Coping strategies to varying degrees.

### **1.5.1 EVALUATION OF THE MODEL OF PSYCHOLOGICAL DISTRESS AND WELL-BEING**

It is often believed that police work is very stressful due to the nature of the work (Siegler and Wilson, 1988). The finding of the Hart et al. (1995) study suggests that this sample of police officers reported more favourable levels of psychological well-being than school teachers, tertiary students and community norms. Thus implying that relatively, police work is not highly stressful. In previous studies (e.g. Brown and Campbell, 1990; Grellet et al., 1992), the findings show that organisational rather than operational experiences are more important in determining psychological well-being, and are the main source of psychological distress among police officers. According to Hart et al. (1995), the importance of the organisational context in which people work rather than the work itself in determining psychological outcome. Overall, Hart's model indicates the important role that work events play in determining Hassles and Uplifts reported by police officers. However, a later study by Hart (1999) implies the importance of making a distinction between the context free (e.g. as measured by the General Health Questionnaire) and domain specific aspects of psychological well-being when investigating the determinants of occupational stress (Kelloway & Barling, 1991). According to Hart (1999), context free measures of psychological well-being say more about non work domains of people's lives than their work domains.

According to Costa & McCrae (1990), individuals who score high on Neuroticism (trait negative affect) have a tendency to experience psychological distress and focus on negative aspects of themselves and their environment. The research by Hart et al. (1995) is contrary to this and indicates that Hassles and Uplifts make a significant contribution to psychological distress and well-being. In line with this, findings suggest that these two dimensions measure a single underlying construct (e.g. Green et al., 1993), and that they are separate but related dimensions (Headey and Wearing, 1992). Further research by Hart (1999) suggests daily Hassles make a separate and meaningful contribution to psychological well-being, over and above effects of Neuroticism, supporting Lazarus (1990).

In the Hart et al. (1995) study, Neuroticism and Extraversion were the strongest determinants of police officers psychological well-being and to some extent predicted



police officers use of Coping strategies and their work related Uplifts and Hassles. These findings indicate the importance of personality characteristics when trying to account for and understand the cause of occupational stress (Hart et al., 1993, 1994a). However, the relationship between personality characteristics, use of Coping strategies, work experiences and psychological outcomes raises the issue of the extent to which these variables are stable or amenable to change. Headey & Wearing (1992) state that Neuroticism and Extraversion are almost completely stable over long periods of time but it is important to establish causes of stability and change in these variables over time (Hart et al., 1994 b). However, the model given only describes static relationships that explain police officers level of psychological well-being at single point in time Hart et al. (1995).

Finally, as Hart et al.(1995) model suggests that both problem and emotion focused Coping are used to various degrees and that they operate through Hassles and Uplifts, these results, together with a comparison with a mediational model, imply the relationship between Coping and work experience is likely to be mutually causal. However, according to Headey et al. (1991), reciprocal causation can only be established through longitudinal research. With respect to this, when cross sectional data are used to measure Coping; caution must be taken to ensure whether objective conditions or subjective experiences are being measured. If measuring subjective experiences, one needs to consider the extent to which measures reflect primary or subsequent appraisal, according to Lazarus and Folkman (1984).

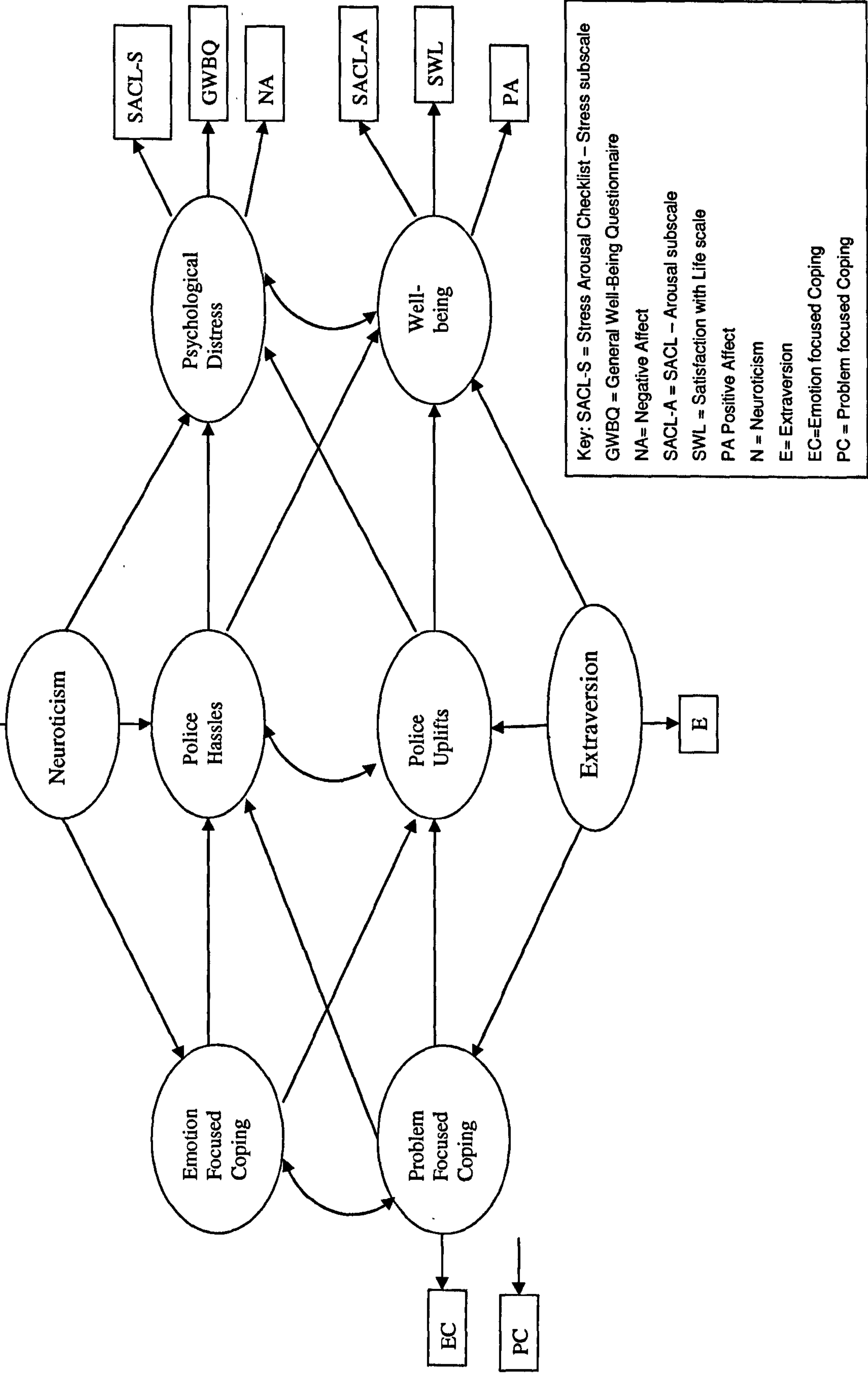
In conclusion, according to Hart et al. (1995) model policing is not highly stressful, relative to other occupational and community groups (e.g. school teachers, tertiary students). Personality characteristics are the strongest determinants of psychological distress and well-being and organisational experiences are more important than operational experiences in determining psychological distress and well-being. Also, positive and negative experiences operate independently and both must be taken into account in order to understand police officers' quality of life (PQOL) and emotion focused Coping tends to be maladaptive, whereas problem focused Coping tends to be adaptive (Billings and Moos, 1984; Headey and Wearing, 1990) cf. Hart et al. (1995) paper.

Thus, the model suggests that police officers' psychological well-being is determined by a complex system of variables and relationships. Each of these variables must be taken into account in order to evaluate and improve the psychological well-being of police officers.

The current research not only uses the Daily Uplifts and Daily Hassles scale, but it has other elements (Neuroticism, Extraversion and Coping) which are also common with the Hart et al. (1995) model.



Figure 1.5.1: Hart et al. (1995)-Model of Psychological Distress and Well-being (taken from Hart et al. (1995)).



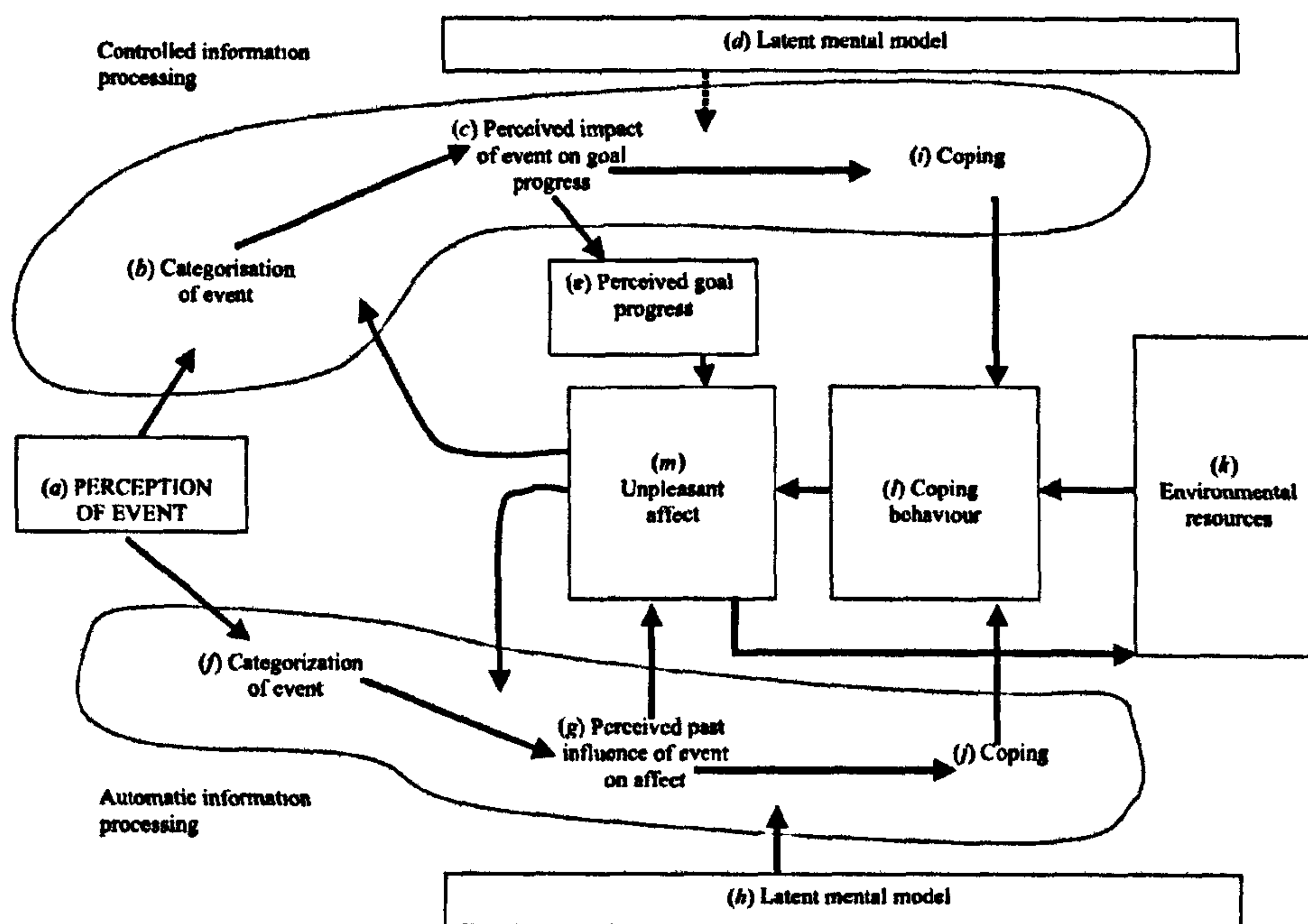
The next few pages describe briefly three more recent models of stress which have been put forward. They are being described to show recent advances in stress theory and to examine whether they may contribute to underpinning the present research. However compared to the 'older' models of stress such as Cooper (1986) and Warr (1987, 1990), at least two of the models, yet have relatively less empirical evidence. The three models are The Model of Work Events and Unpleasant Affect (Daniels, Harris, & Briner, 2004), The Job-Demand Resources Model of Burnout (Demerouti, Nachreiner, Bakker, & Schaufeli, 2001) and a model that addresses Effects of Stress on Job Satisfaction, Propensity to Leave and Job Performance (Fried, Shirom, Gilboa, & Cooper, 2008).

### **1.6 THE MODEL OF WORK EVENTS AND UNPLEASANT AFFECT (DANIELS, HARRIS AND BRINER, 2004)**

This approach takes account of the fact that in a contemporary work environment there is an ever increasing transfer, interpretation and manipulation of information (Sparrow, 2003). Daniels et al's. (2004) cognitive model encompasses several related areas of theory; appraisal theory (e.g. Lazarus, 1999); affective events theory (Weiss & Cropanzano, 1996); approaches based on cognitive information processing (Power & Dalglish, 1997); action control theories (e.g. Frese & Zapf, 1994) and the job demand-control support model (Karasek & Theorell, 1990). According to the authors the model aims to gain an understanding of cognitive processes by which people categorise work events so that these events are inferred to cause unpleasant affect in an organisation. It also tries to deal with mutual influences between affect and the processes that generate and modify affect.



**Figure 1.6.1 The Model of work events and unpleasant affect (Daniels et al., 2004).** Taken from Daniels, Harris and Briner (2004)



**Figure 1. Model of work events and unpleasant affect.**

This model according to Daniels et al. (2004) takes account of how support and control can accentuate the impact of aversive events. For example, research has shown when the nature of the job control does not match aversive events then job control leads to greater unpleasant affect (Mullarkey, Jackson, Wall, Wilson, & Grey-Taylor, 1997; Sargeant & Terry, 1998). This negative or reverse buffering effect has also been observed for social support (Buunk & Hooren, 1992; Kaufman & Beehr, 1986). There is also evidence that negative effects of support are related to reductions in self-esteem and competence (Blaine, Crocker, & Major, 1995). The model additionally suggests that aversive events activate mental models of individual differences (e.g. negative affectivity, locus of control and type A behaviour) and that these in turn activate phenomenological experience of unpleasant affect. However, the authors are aware as suggested by Moyle (1995) and Zellars, Perrewe, & Hochwarter (1999), that there is inconsistent evidence for individual differences as moderators of the link between aversive events and unpleasant affect. Also empirical evidence suggests that mental models of aversive work events are influenced by more than personality. For example, the nature of the work environment and attitudes closely related to socialization into different work cultures also plays a role (Daniels et al., 2002). The model also contributes to understanding and explaining change and stability in affect, and has implications for cognitive mapping methods and for practice in the real

world within an organisation. Overall, according to Daniels et al. (2004) their model has been proposed to show how the influence of work environments on unpleasant affect is predicated upon basic cognitive processes, such as automatic and controlled information processing, categorization and the generation of mental models in working memory. They suggest the model is unique in that it takes account of a broader range of organisational phenomena and implies a broad range of interventions. Furthermore, this model unlike previous ones contributes to understanding appraisal and coping and the links between work and affect. However, there is little empirical evidence for this model thus far.

### **1.7 THE JOB DEMAND RESOURCES MODEL OF BURNOUT (DEMEROUTI, NACHREINER, BAKKER AND SCHAUFELI, 2001)**

The prevailing view of burnout is that it is found exclusively in the human services industry such as social work, health care and teaching (Maslach and Schaufeli, 1993). The most influential definition of burnout has been given by Maslach (1982), who characterised burnout as a 'syndrome of emotional exhaustion, depersonalisation and reduced personal accomplishments that can occur among people who do "people work" of some kind'. Emotional exhaustion refers to feelings of being over extended and exhausted by the emotional demands of one's work. Depersonalisation is characterised by a detached and cynical response to the recipient of one's service or care. Reduced personal accomplishment refers to the self evaluation that one is no longer effective in working with recipients and in fulfilling one's job responsibilities (Maslach, Jackson, and Leiter, 1996). According to this model, burnout develops irrespective of the type of occupation when job demands are high and when job resources are limited because such negative working conditions lead to energy depletion and undermine employees' motivation respectively.

A closer examination of the three burnout dimensions of Maslach (1982) shows that they can be reformulated in terms that are more general. Conceptually, emotional exhaustion closely resembles traditional stress reactions studied in occupational stress such as fatigue, job-related depression, psychosomatic complaints and anxiety (Buunk et al., 1998; Warr, 1987). Several studies have shown for example, considerable overlap between emotional exhaustion and these stress reactions (Schaufeli and Enzman, 1998), similar job stressors (e.g., work load, role problems) and attitudinal and behavioural outcomes (e.g., turnover intentions and absenteeism). However, Demerouti, Nachreiner, Bakker, and Schaufeli (2001) have put forward two basic arguments for burnout outside the human services



dimension. First there is little theoretical rationale for limiting burnout to human service professions ( see also Maslach and Leiter, 1997 and Schaufeli and Enzman, 1998). Second, a lot of empirical evidence shows that the stressors that may lead to burnout in the human services can be found in other work settings as well (Buunk, De Jonge, Ybema and de Wolff, 1998).

In line with this view, a recent model that has been applied in occupational settings is that put forward by Demerouti, Nachreiner, Bakker, and Schaufeli (2001); The Job-Demands Resources Model of Burnout (JD-R Model, see figure 1.7.1). The authors suggest that it is likely that the core dimensions of burnout as found in the human services (emotional exhaustion and depersonalisation), could be manifestations of more generic phenomena ; exhaustion and disengagement.

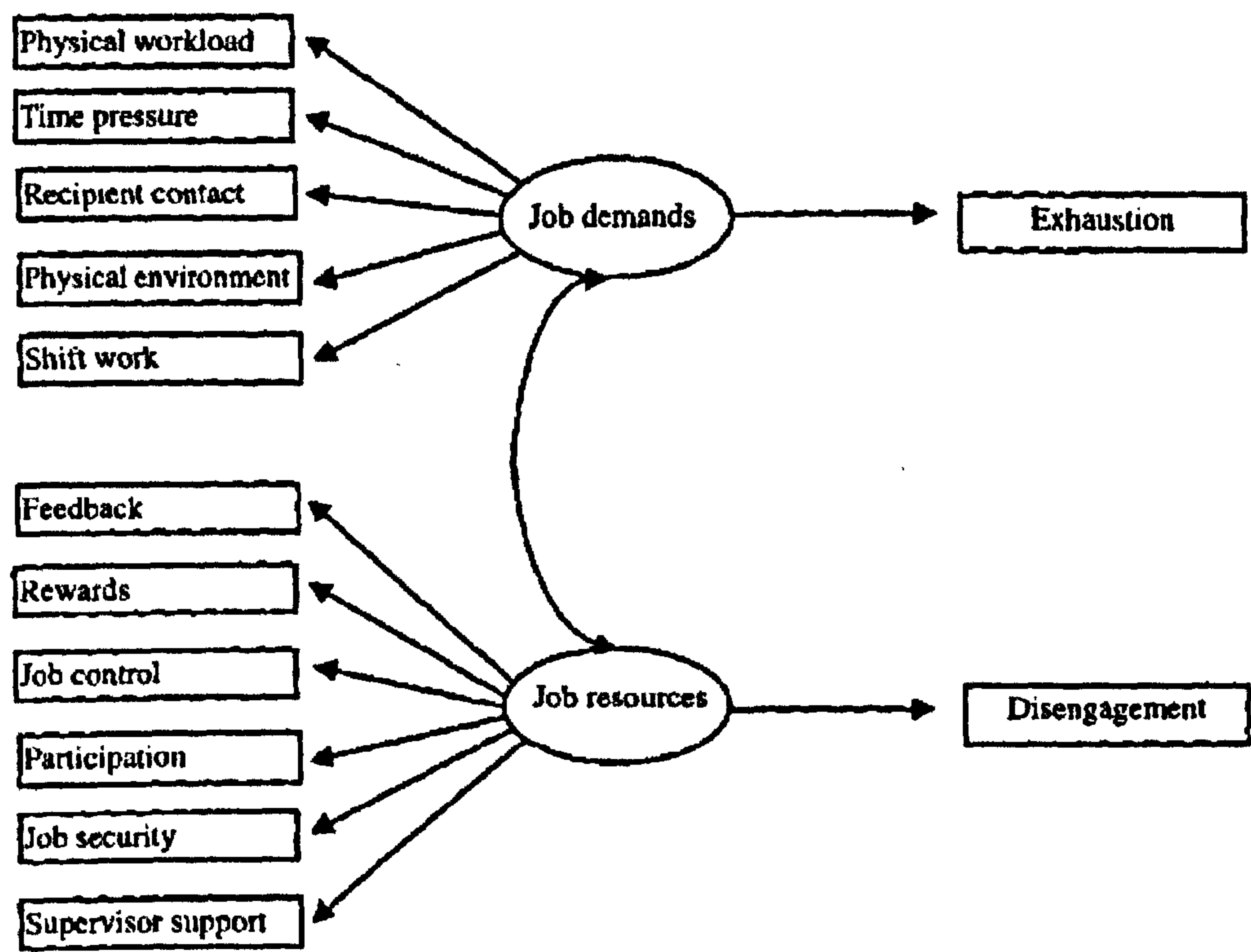
This model proposes that working conditions can be categorised into two broad categories, job demands and job resources that are differentially related to specific outcomes.

According to the authors a series of LISREL analyses using self reports as well as observer ratings of the working conditions provided strong evidence for the JD-R Model. Job Demands refer mainly to the exhaustion component of burnout, whereas (lack of ) job resources are primarily related to disengagement. Furthermore, the research by Demerouti et al. (2001) suggested that the development of burnout symptoms is determined by a specific constellation of working conditions. When the job demands are high they predict high levels of disengagement (but not exhaustion). In jobs with both high job demands and at the same time, limited job resources, they predict that employees develop both exhaustion and disengagement and this state represents a dichotomous and not a continuous trait as in Maslach's concept where burnout can have low, medium or high levels (Maslach and Jackson, 1986).

Overall, findings of the research have implications for future research and practice and, with respect to burnout existing outside the human service professions. The JD-R Model was primarily developed to explain burnout and burnout is not being addressed in the current research. However, there are ideas from the model that are relevant for the current research, for example, the JD-R model, like the Hart et al. (1995) model emphasises that demand and resources are both important. In line with this, in the proposed model the importance of demands (e.g. hassles) outcomes (e.g. uplifts /individual differences) are acknowledged. However, the JD-R model does not take individual differences into

account, whereas in Cooper’s (1986) model and the proposed model, individual differences are viewed as important. Therefore, although the JD-R model has some empirical support it was considered not relevant to the current research as the Cooper, Warr and Hart models.

**Figure 1.7.1 The Job-Demands Resources Model of Burnout (Taken from Demerouti et al., 2001 )**



*Figure 1. The job demands–resources model of burnout.*



## **1.8 EFFECTS OF STRESS ON JOB SATISFACTION, PROPENSITY TO LEAVE AND JOB PERFORMANCE (FRIED, SHIROM, GILBOA AND COOPER, 2008).**

A final model that is a direct adaptation of a part of the Cooper (1986) model has been put forward very recently by Fried et al. (2008). The authors combined meta-analysis with structural equation modelling (SEM) to compare alternative models of the relationships among work stress, psychological mediators and job performance. They examined the mediating effects of job satisfaction and propensity to leave and their effect on the relationships between role ambiguity, role conflict and job performance. The meta-analysis included both published and unpublished studies conducted over a period of 25 years. This resulted in 113 independent samples with more than 22, 000 individuals. They propose (using structural equation modelling), a partial mediation model in which stress is related to job performance directly and indirectly through job satisfaction and propensity to leave. They justify this by stating that past quantitative reviews of the relationship among role stresses and job performance have not investigated theoretically meaningful mediators of these relationships.

They conceptualised the variable **Job performance** on two criteria, self rated and supervisor rated performances. **Role stress** was defined as 'connoting a worker perceiving a situation as being potentially or actually threatening' (e.g., Jackson and Schuler, 1985). **Role Ambiguity** was defined as the extent to which employees are unclear about their responsibilities or when role related information is unclear (King and King, 1990). **Role Conflict** was defined as the extent to which employees experience conflicting demands at work (Kahn, Wolfe, Quinn, Snoek, and Rosenthal, 1964). **Job Satisfaction** was defined as 'one's cognitive (evaluative), affective (or emotional) and behavioural responses to one's job, as assessed by one's evaluation of job features or characteristics, emotional responses to events that occur in the job, and job related behavioural intention'. **Propensity to leave** referred to one's desire or willingness to leave the employing organisation.

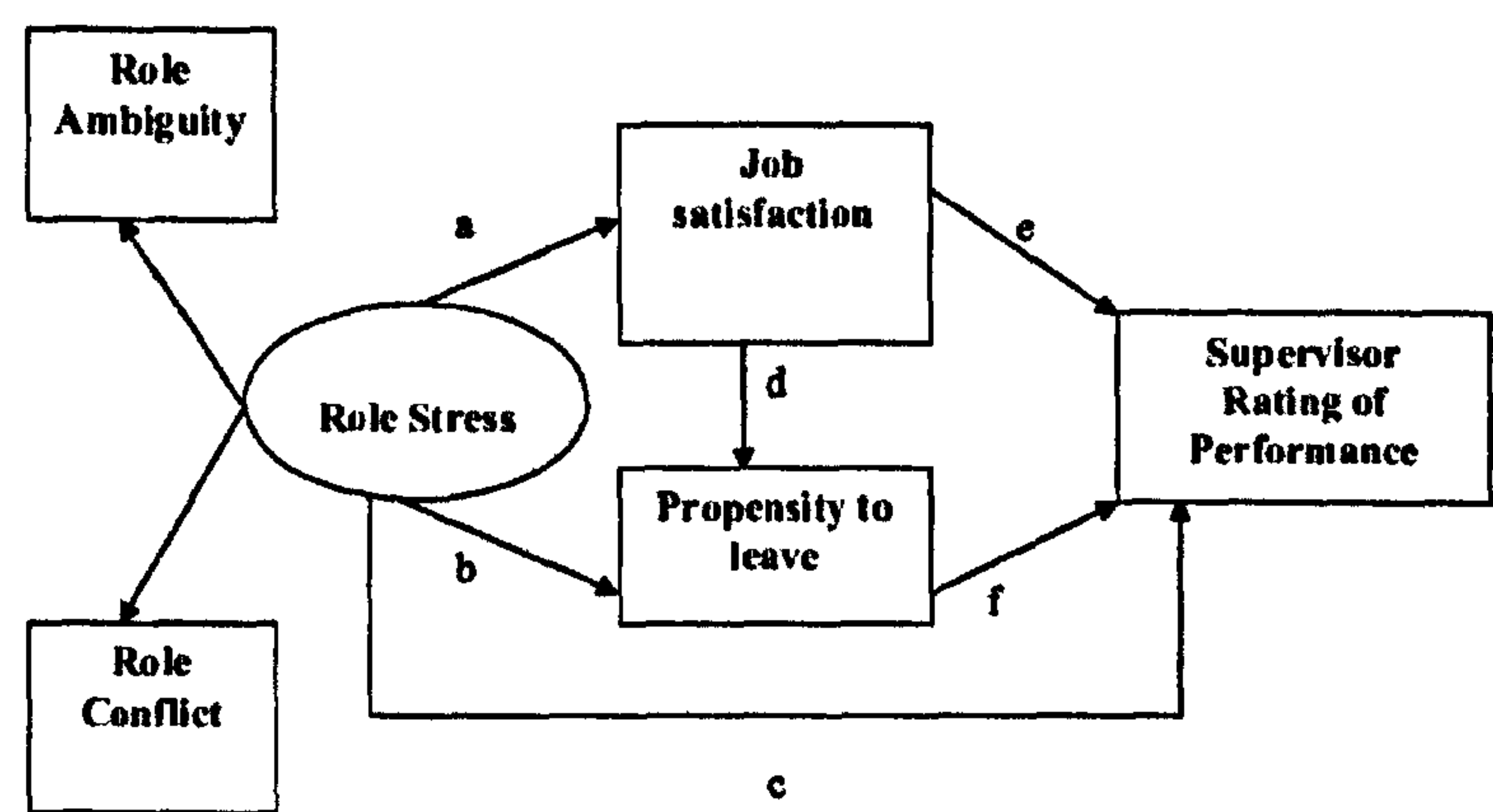
The results of the research supported the expected mediation effects of job satisfaction and propensity to leave on the role stress-job performance relation. Thus Fried et al. (2008) suggest that job satisfaction and the propensity to leave have influence in explaining the relationship between role stress and job performance as mediators over and above the direct links between role stress and job performance. Furthermore, that their findings

provide support for the theoretical viewpoint that role stress as represented by role conflict and ambiguity may lead to intention to leave primarily because they are likely to create negative affect toward the threat created them. That is, intentions to leave an employing organisation tend to primarily reflect individuals' attempts to reduce negative affective responses to their job environment. Also that both affective reactions and intention to leave caused by role stress tend to contribute to job performance. However, empirical findings of several primary studies found a null or negligible direct path from role stress to propensity to leave, (Bedeian and Armenakis, 1981); but the indirect effect of role stress on job performance through job satisfaction in past studies was significant and substantive (e.g., Firth, Mellor, and Loquet, 2004).

Despite the findings above, this research also has limitations, firstly the authors state that an 'overwhelming majority of the primary studies quantitatively summarised in our study are cross sectional in nature and thus do not allow inferences on causality'. Secondly, there are other models equivalent to that in Fig 1.8.1 with the same fit indices, but they argue that the hypothesised model (Fig 1.8.1) is the one that best integrates past theory on the stress-performance relationship (Jex, 1998). Furthermore, according to Fried et al. (2008) the assumption of the causal relation between stress and performance is also consistent with the more general approach of the causal effect of attitudes and intentions on behaviour (e.g., Azjen, 1991). Finally, although prior meta analytic studies have provided support for the contribution of stress to performance, the study was based on secondary analysis of a meta analytic dataset. Thus, the researchers were limited by the range of variables included in past research on work role chronic stresses and performance (Fried et al., 2008).



**Figure 1.8.1 Effects of Stress on Job Satisfaction, Propensity to leave and Job Performance (Taken from Fried et al., 2008).**



**Figure 1.** Effects of stress on job satisfaction, propensity to leave, and job performance.

### 1.9 RATIONALE FOR THE MODEL PROPOSED IN THE CURRENT RESEARCH

For the present research Cooper’s model (1986) and Williams and Cooper’s (1998) model have been adapted and used as the basis for the research within the Fire Service. The Cooper models are extensive models that take account of many factors that influence the stress process. The original Cooper model has had an abundance of support for over twenty years and is still being adopted/ extended and used today (for example, Fried et al., 2008). Other more recent models such as The Model of Work Events and Unpleasant Affect (Daniels, Harris, and Briner, 2004), and the Effects of Stress on Job Satisfaction, Propensity to Leave and Job Performance (Fried, Shirom, Gilboa, and Cooper, 2008), compared to the ‘older’ models of stress such as those of Cooper (1986) and Warr (1987, 1990) have relatively less empirical evidence to support them and thus, need further research in order to be of equal standing. However it should be noted that the current research and the proposed model is also influenced by the work of Warr (1987, 1990) who used the outcome measures Job Satisfaction, Competence and Aspiration and Hart et al. (1995) who used Daily Hassles and Daily Uplifts measures of stressors and the individual difference variables (Neuroticism, Extraversion and Coping). However, despite the similarity in the named variables to the Hart et al. model, the structure of the proposed model is more similar to Cooper’s model. That is, in the Hart et al. model the Daily Hassles and Daily Uplifts are influenced by the individual difference variables Neuroticism

and Extraversion and by Coping. Thus the current research builds on a solid base of previous research in order to investigate stress in the surprisingly under researched area of the Fire service and thus Cooper's model is being used as a basis for the current research.

The proposed model attempts to identify the sources of stress, moderating/mediating factors such as individual differences, and Coping methods and the resulting outcomes, both at an individual (for example, psychological wellbeing) and organisational level (such as Work Performance) level. It is a model, as far as the author is aware, that has not been applied to the Fire services, nor has it been applied on a longitudinal basis.

In summary, the model incorporates some of the factors mentioned in the Work stress models of Cooper (1986) and Williams and Cooper (1998). Furthermore, as mentioned above, the proposed model draws on Warr's (1987) model by including several outcomes, such as job-related well-being (Job Satisfaction, Aspiration, Competence), context-free well-being (General mental health), as well as Work Performance. In order to make the model more relevant to the emergency services it also draws on Hart et al. (1995) research in the Police service. Sources of pressure include positive work experiences (Uplifts) and stressors (Hassles). Individual differences include positive affect (Extraversion), negative affect (Neuroticism) and Coping, as well as Mastery. The proposed model also extends the work of Parkes (1990) by exploring the moderating role of Neuroticism, Extraversion and Coping between stress and the outcome measures. This will be discussed in Chapters 2 and 3 before the model proposed in the current research is presented in Chapter 4.



## **1.10 EMERGENCY SERVICES SPECIFIC STRESS RESEARCH**

### **1.10.1 BACKGROUND**

The Emergency services consist of the Police, Ambulance and Fire services. Until the early 1980's very little research was done with these service personnel to examine whether they suffer from negative psychological consequences as a result of their work.

For the purpose of the current research only the research related to the Police and Fire services will be discussed in detail. However there is research in the Ambulance services, for example, research with the London Ambulance services by Mason and Mason (1982) found 15% suffered from Post traumatic Stress Disorder (PTSD). They identified three specific situations; infant death, mass casualties and childbirth with complications that caused trauma related reactions. Grigsby and McKnew (1988) found burnout was considerably higher amongst the paramedics compared to other occupational groups, and Ravenscroft (1993) also reported 15% prevalence of PTSD in their study of the London Ambulance service. However for the purpose of the current research only Police Service related literature would be covered as some of the measures (Daily Uplifts and Daily Hassles scale) used in the present study was based on studies that examined Police officers.

### **1.10.2 POLICE SERVICE RESEARCH**

There is much research with the Police service, for example, research with the Hampshire Police services by Brown and Campbell (1990) found GHQ (General Health Questionnaire) scores above the threshold for good well-being. Kinchin (1994) found 14% of Thames Valley front line Police officers may be suffering from PTSD (Post Traumatic Stress Disorder), and Thompson (1991) found 10% of Police volunteers in Lockerbie had psychological problems and 3% needed treatment.

The studies by Peter Hart and his colleagues, and Paula Brough and her colleagues, used a police service specific Uplifts and Hassles scale. This scale was modified to form a fire service specific scale for use in the current research.

The studies by Hart et al. (1993, 1994) on police officers addressed occupational well-being with respect to the exposure to frequent, repeated, minor adverse work experiences (Hassles) rather than a traumatic event. Their research concluded that police –specific sources of stress could be divided into two broad categories: operational and organisational stressors. Operational stressors include items such as making arrests, charging people, court and legislative issues, and delivering death messages. Organisational stressors are those based within the police forces, and include items such as management and communications issues, involvement within decision –making practices, paperwork and colleague problems. The findings suggested that administrative (organisational) work caused police officers greater subjective distress than operational work such as those involving arresting individuals, court hearings and danger situations.

Hart et al.’s (1995) study of 527 Police officers combined data from two related studies and addressed personal and work related factors that had an impact on psychological well-being. This study found that positive and negative work experiences independently contributed to Police officers’ perceived Quality Of Life (PQOL). PQOL addressed personality, Coping and positive (beneficial to well-being) and negative (harmful to well-being) experiences. Hart et al. (1995) found that Neuroticism and Extraversion were the strongest predictors of PQOL and that problem focussed Coping was associated with negative work experiences and emotion focused Coping was associated with negative work experiences.

Brough’s (1998) study of 552 newly qualified UK Police officers addressed expectations and subsequent actual police work-based daily Hassles as compared with traumatic critical incidents. The measures used were Police Daily Hassles and Uplifts scales (Hart et al., 1995) and a measure of work and non work Coping (Dewe and Guest, 1990; Edwards and Baglioni, 1993). This research found, as in the Hart et al. (1993, 1995) studies, that organisational aspects of the officers’ work were more significantly related with poor mental well-being than operational aspects of work. In particular within this study, ‘working with incompetent colleagues, paperwork, red tape Hassles and a lack of say in decision making’ were perceived as causing the most Hassles. At work, respondents indicated using positive and adaptive Coping methods (such as seeking advice and trying to change the situation). Qualitative research within the study indicated that to reduce the discrepancy between work expectation and actual work experience a more realistic view of



work should be presented at the probationary period during training (especially with respect to the administration procedures). This was suggested as one way of increasing Police officer's psychological well-being. However, the author suggests the only way to reduce workplace stress is an organisational response by the police force.

Brough and Guppy (1997) in their study of 160 experienced and 552 novice police officers found frequently occurring positive work experiences were strongly associated with work related well-being; as well as negative work experiences and frequently occurring organisational rather than operational work factors. The research indicated also that work expectations of novice police officers differed greatly from actual police officers work.

### **1.10.3 FIRE SERVICE SPECIFIC STRESS RESEARCH**

The majority of the research that exists with regards the Fire services has been done outside the UK. In the United States (US), Scott and Myers (2005) found in their study, that Fire fighters recognised the need to manage their own and their clients' emotions in order to deliver an adequate service. There is also an abundance of research in other countries such as Japan. For example, in Japan Takeyama et al. (2004) studied the influence of shift schedules in a population of fire fighters. They found that irregular sleep patterns resulted in larger numbers of complaints of fatigue and adversely affected physiological functioning also in Australia (Paton et al., 1995).

### **1.10.4 STUDIES RELATING TO TRAUMATIC STRESSORS**

Whilst it is not the focus of the current research, the bulk of the studies from a psychological perspective have focused on the concept of PTSD and its consequences. According to the DSM-IV definition, PTSD is the development of a set of characteristic symptoms resulting from exposure to an extremely traumatic stressor. There are three categories of symptoms: re-experiencing of trauma, avoidance of trauma-related stimuli and increased emotional arousal. PTSD is diagnosed if the symptoms persist for at least one month or they remit within 4 weeks after the traumatic event. According to Figley (1995) it can be further divided into Primary traumatic stress; those symptoms directly related to experiencing stress as a victim of the traumatic event and Secondary stress; those symptoms resulting from helping or wanting to help a traumatized or suffering person. According to McFarlane (1988a), fire fighters are at a higher risk of developing PTSD in



part due to duty related exposure to very stressful (traumatic) events such as attending catastrophic bush fires.

Post trauma stress has been reported in fire fighters throughout the world, including, Japan (Paton and Smith, 1995 ), Australia (Paton et al., 1995 ) and Canada (Corneil, 1995). Wagner et al. (1998) studied PTSD in 402 German fire fighters. They used, amongst other scales, the German versions of the PTSD Symptom scale and the GHQ. They found that almost one fifth of the sample had prevalence of PTSD and almost one third had psychiatric morbidity according to the GHQ. In this study traumatic stress was predicted by longer tenure in the job and the number of distressing events attended in the last month. Furthermore, psychiatric impairments such as depressive mood, psychosomatic complaints, social dysfunction and substance abuse were also predicted by traumatic stress. This research indicated that Fire fighters fail to cope effectively with primary stress, but more so secondary stress, in their daily work life.

Beaton et al. (1998) tried to find variables associated with PTSD symptomatology. They examined 173 urban professional fire -fighter and fire-fighter/paramedics in two North West US cities. The sample had to rate the stressfulness of 33 Incident Stressors (IS) on a scale of 0 = not stressful at all to 50 = somewhat stressful and 100 = extremely stressful (Gift, 1987). They also had to indicate whether they had experienced such an incident in the last 6 months. These IS were items /scenarios ranging from rare catastrophic events/incidents (for example, sudden infant death in an incident) to more common encounters (e.g., 'routine' Cardiopulmonary resuscitation (CPR)). The study showed large differences between participants in their appraisal of the stressor intensity with respect to the various IS, indicating the importance of the role of individual differences. However, (with a few exceptions) the appraisal of the incident stressfulness was the same whether or not the participant had actually experienced such a stressor in the last six months. These findings support ratings and rankings given for Incident scenarios by Australian volunteer fire fighters (Bryant and Harvey, 1996). The authors caution that the data may not be representative of volunteer Fire-fighter and emergency service workers from other regions of the U.S. and that findings are limited in that there were only 173 participants from a total sample of 500 (although the non participants did not differ from the respondents in terms of demographics and job variables assessed). Despite this, the data are useful in identifying incidents that may be very stressful and thus planning for preventative interventions.



Corneil et al. (1999) looked at PTSD in the presence of mediating and moderating variables between two Fire-fighter samples from two countries, the US (n=203) and Canada (n=625). They found similarities between the two groups with regards to risk of PTSD, in that lower levels of PTSD were associated with prior help seeking behaviour (i.e., seeking counselling), higher levels of familial and at work social support (also indicated previously by Beaton et al., 1997), and higher levels of PTSD were associated with higher levels of work strain. The two samples differed with respect to the types and frequencies of traumatic events each were exposed to, rank, and marital status. That is, in the Canadian sample, being married and fire service personnel were protective factors which were associated with significantly lower incidence of PTSD, compared with being unmarried and fire service officers. Also Canadian fire-fighters with more than 15 years of fire service experience had higher odds of developing PTSD compared to US fire-fighters. These results indicated that as well as exposure to traumatic events, off work levels of social support and daily organisational and administrative factors increased the risk for PTSD in these two samples. This research indicates there are organisational similarities between the fire-fighter occupational groups from two countries based on the organisational and social structures inherent in the fire service. However, this study was limited in that it was cross-sectional, only used self report measures of health status and the methodology did not allow to determine pre-existing trauma exposure nor the contribution of the exposures recorded during the research. Also, the fire fighter participants from the US and Canada differed in size, although both samples were representative of the respective departments which they represented.

Witteveen et al. (2006) investigated PTSD in 334 Fire fighters and 834 Police officers who attended the 1992 El Al Boeing 747 plane crash in the Netherlands. The data collected was between 2000 and 2002, thus on average 8.5 years after the disaster. Scales used were the Self- Rating Inventory for Posttraumatic stress disorder (SRIP) and the Impact of Events Scale (IES). They found that in this sample of (low stress) fire fighters and police officers, the previous (SRIP) found a distinction between (active) avoidance and numbing which was similar to findings in samples that have high levels of PTSD. However due to the psychometric properties of the two scales there was only low to moderate reliability between the similar factors in the two instruments. The authors recommended that this research be replicated in other traumatized or community samples.



Other studies have addressed Critical Incident Stress Debriefing (CISD) such as Harris et al. (2002) who define it as ‘a peer counselling group procedure with psycho-educational components that provide information on various stress reactions following exposure to a critical incident’. Mitchell (1988a, 1988b) and Mitchell and Bray(1990) propose a ‘critical incident’ in an emergency services setting is ‘an exposition to personal loss or injury, traumatic stimuli, mission failure, or human error; attending several difficult situations in a short space of time, calls that attract excessive media attention and contact with the dead or severely injured children’. Mitchell and colleagues suggest such incidents may affect fire fighters’ normal ability to cope. Other research by Duckworth (1986) supports this view, and suggests it can result in individuals developing an array of psychological, social and physical reactions and stress reactions with PTSD features. Thus psychological debriefing or CISD has been adopted by many fire, emergency medical and police departments in order to reduce levels of stress amongst employees. However Harris et al. (2002) have contradictory findings. Their study of CISD with 852 US Fire-fighters, looked at five major variables; avoidance Coping, perceived social support, negative affectivity, world assumption and PTSD symptoms. They found a weak inverse correlation between debriefing and negative affectivity and a weak positive correlation with positive world assumption but no relationship between debriefing and PTSD. Thus these authors suggest caution against implementing CISD and similar occupational interventions due to past claims of their efficacy.

Monnier et al. (2002 ) used the Conservation of Resources (COR, a general stress theory, Hobfoll, 1998) to examine the relationship between critical incident exposure and resource loss in predicting later psychological outcomes. This theory postulates that stress is conceptualised with respect to resource loss and based on the premise that individuals strive to obtain, retain, protect and foster those things that they value. According to this view stress is thought to occur when individuals or groups are faced with situations when there is a threat to resources, or there is significant resource loss, or when resources are invested to increase return and this does not occur and there is a loss. These resources are categorised into four main groups: personal characteristics (e.g., occupational skills, sense of self -esteem), object resources (e.g., car, home), condition resources (e.g., a good marriage, tenure) and energy resources (e.g., money, credit). Researchers such as Freedy et al. (1994), Hobfoll and Shirom, (1993) and Wells et al.(1999) suggest that COR theory is useful in explaining reactions to major and minor stressors and ongoing minor job –related stressors. The Monnier et al. (2002) study examined 150 fire-emergency workers from a



mid-sized, mid-western city Fire Department in the US. The results suggested that the stress of fire-fighting and delivering emergency medical interventions were related to developing depression. This association was previously found by other research (for example, Gruen, 1993). Research by Lane and Hobfall (1992) and Speilberger et al. (1985) has indicated that the emotion of anger has a strong impact on both physical well-being and relationships.

#### **1.10.5 STUDIES RELATING TO NON TRAUMATIC STRESSORS**

Fullerton et al. (1992) studied psychological responses of two groups of Fire fighters attending different incidents in the US. One group consisting of 12 and the other of 8 Fire fighters. Four types of responses were noted: identification with the victim, feelings of helplessness and guilt, fear of the unknown, and physiological reactions. They found stress response was mediated by four factors. First the availability of social support in the form of support from buddies, fellow workers, (with respect to decisions taken) and humour as a type of membership of the rescue team and therefore a shared experience. Second was the type of leader (that is, the ability of the group leader to express and thus 'allow' for the mourning and expression of loss experienced after a traumatic incident had an influence on group recovery). Third, level of training (that is, recall of training enables individuals to stay focussed and feel in control and perform successfully under rescue circumstances). Fourth, the use of rituals, to construct shared beliefs (under circumstances of high stress and lack of meaning), enables employees to manage 'fear of the unknown' under conditions of uncertainty. However, the authors caution that there were no control or comparison groups for the two samples, and although findings were discussed with respect to other rescue workers, empirical work needs to be done on these.

A study by Carlier et al. (1997), using a fire fighting population, reported that stress can be caused not by the incidents attended, but by factors such as expectations placed on individuals by the organisation.( This finding was similar to that by Hart et al. (1995) in his study of Police officers). In this study Fire fighters had mixed views with regards attending incidents. Some thought having a set time period soon after a stressful incident when they should not be called out may be beneficial; others thought getting back to attending incidents soon after was similar to 'getting back on your bike after a fall'. However, most in the study thought it would be of benefit, if a few weeks after a particularly stressful



incident, a senior officer would ring to see if all individuals were well. The majority of the participants had a number of support systems ranging from family members to being part of the team.

Lusa et al. (2002) looked at 543 male Finnish Fire fighters during a long term strike. The study addressed physical work capacity, stress, sleep disturbance and occupational accidents. Stress was assessed using the question “Stress means the situation when a person feels tense, restless, nervous or anxious or is unable to sleep at night because his mind is troubled all the time. Do you feel that kind of stress these days?” Elo, Leppanen & Jahkola (1999) found that this question has been shown to be a valid measure of stress at group level. A study by Lusa-Moser et al. (1999) indicated fire-fighters working during the same strike reported more stress than those in a normal situation. It was suggested that this could be due to exceptional circumstances giving rise to unusual work tasks, needing to be performed by members who do not know each other and may have different working methods. The findings of Lusa et al.’s (2002) study indicated that the most significant work organisational risk factors of stress were small crew size and small shift size. These two variables independently predicted the level of stress. This research indicated stress was found to increase with increasing age (also found by Lusa-Moser et al., 1999). Additionally, disturbance in social life seemed to be highly associated with stress; thus indicating the importance of social life during work under exceptional circumstances.

Regehr et al. (2003) addressed social support, self -efficacy and trauma in 65 newly recruited and 58 experienced fire fighters. The study indicated that new recruits had significantly lower depression and lower levels of symptoms of trauma than their senior counterparts. More experienced fire fighters had significantly lower levels of social support and perceived social support from family and their employers. This was of concern as previous research has shown that social support could act as a protective factor in managing trauma (Regehr et al., 2000). Thus in this study, low levels of social support were associated with high levels of traumatic stress and depression. The authors suggested that the nature of the job, with respect to the shift work, might have made it difficult to develop strong social support circles outside of work. Finally lower levels of self- efficacy were reported by the more experienced fire fighters than in new recruits. The researchers suggest that this could be due to age and experience decreasing self efficacy, or higher level of education of new recruits resulting in their perception of greater self –efficacy or limited opportunities for advancement within the fire service undermining a sense of self



efficacy. However, the authors highlight limitations of the study suggesting it was difficult to quantify symptoms of distress, as the Impact of Events Scale was limited in that it did not address all aspects of PTSD to allow for diagnosis. Also DSM-IV criteria are subjective and therefore vulnerable to deception in both areas of PTSD and depression. Thus this could result in discrepancies between self-reported distress and objective evidence of harm as suggested by Bowman (1999).

A study looking at the role of social support and psychological well-being is that by Cowman et al. (2004), who studied 221 New York Fire fighters before the 9/11 incident. This research found perceived social support partially mediated the relationship between psychological sense of community and care giver satisfaction; and fully mediated the relationship between psychological sense of community and care giver stress. That is, in times of stress, fire fighters rely on support resources, other than those at work (for example, sense of community) to help combat the negative effects of stress. However, the authors caution that the study used a multi-dimensional measure of psychological sense of community (i.e. Bishop et al., 1997) and the results suggest a better measure would be a one-dimensional construct. Another criticism is that, if a measure of care-giver perception more pertinent to the civic service was used; stronger relationships amongst variables may have been obtained. Finally the study used data collected before the 9/11 incident. Therefore it gives no indication of the impact of such a national tragedy on fire fighters' sense of community within the department.

Brough (2004) in a sample of 686 'operational officers' from the emergency services consisting of Fire personnel (N = 231), Police officers (N=223) and Ambulance officers (N= 232) in New Zealand, looked at effects of psychological strain on Job Satisfaction. Daily stressors were measured using an adapted version of the Police Daily Hassles Scale (PDHS; Brough, 1998) but items were generalized to be applicable to non -Police staff. A revised Impact of events scale, 15 item Job Satisfaction measure and 12 item GHQ were also used. In all three emergency services, organisational stressors predicted levels of Job Satisfaction better than trauma symptomatology. Finally, operational Hassles directly predicted trauma symptomatology and psychological strain, while organisational Hassles predicted reduced extrinsic Job Satisfaction. In addition, there was no difference in the prediction of strain by both organisational and traumatic stress between Fire and Police officers, while organisational stressors were not predictive of strain for Ambulance officers. Fire and Ambulance personnel had comparable experiences of occupational stress



(as found by Beaton and Murphy, 1992). However, the author highlights the limitations of the study, in that it is cross-sectional, and a longitudinal design could have determined causality. The three emergency services have different organisational cultures (a factor that had emerged throughout the study, especially with respect to the acceptance of female operational workers) and thus a measure of this would have given a greater understanding of the differences found. Additionally, the confounding roles of affective states such as Neuroticism (which is known to inflate the associations between self report measures of stressors and strains (Watson et al., 1987) was not tested).

Brough (2005) investigated 723 emergency service personnel (consisting of Fire, Police and Ambulance officers) in New Zealand. The sample consisted of 241 Fire officers, 229 Police officers and 253 Ambulance personnel. The scales used were, the Police Daily Hassles Scales (PDHS; Brough, 1998). The PDHS was previously adapted by Brough (2004) by deleting items so that it could be generalised to all three emergency services. A measure of Job Satisfaction (Warr et al., 1979); the 12 item GHQ measure (Goldberg, 1972), the 4 item negative carry over measure (Warr et al., 1979) and the 12 item work well-being scale (Warr et al., 1979) and the 12 item Neuroticism scale (Eysenck & Eysenck, 1964) were also used. A limitation of the Brough (2004) study was the confounding effects of affective states which were not measured, thus it is assumed that a measure was incorporated in this study for this reason. Overall the research showed that high levels of both organisational and operational Hassles and Neuroticism were associated with high levels of work-family conflict and low levels of Job Satisfaction and psychological well-being. More specifically, Fire (and Ambulance) personnel had less work Hassles (both organisational and operational) compared to the Police personnel. Compared to Fire (and Police), Ambulance personnel had statistically higher levels of work-well-being and lower levels of work-family conflict; and Police personnel had the highest levels of work-family conflict when compared with both Fire and ambulance personnel. A limitation of this study was that it was cross-sectional, thus no causal relationships can be assumed.

## **1.11 RESEARCH IN THE FIRE SERVICE WITHIN THE UK**

For the Fire services in the UK the turning point with regards to claims for psychological damage resulting from attending 999 calls came as a result of the Kings Cross disaster.



This resulted in a fire-fighter successfully claiming for damages (for suffering from PTSD) as a result of attending the Kings Cross incident. Since this, PTSD has been recognised formally as a health and safety issue. Following on from this, Fitzpatrick (1994), in his study, found that prolonged exposure to routine 999 calls in Fire fighters was the main cause of PTSD.

Other studies such as that by Baker and Williams (2001) have addressed stress from a problem solving framework in three divisions of a UK regional fire service. Within such a framework Lazarus and Folkman (1984) defined stress as an interaction or transaction between an individual and the environment whereby an individual's appraisal of an event may lead to deleterious effects on psychological and physical well-being. According to D'Zurilla and Nezu (1990) the problem solving model suggests that stress is a function of continual and reciprocal interactions between major life events, daily problems and problem solving Coping, the outcome of which may be a reduction in psychological and physical well-being. Overall studies utilising this approach suggest that problem solving ability has both a direct and indirect influence (via stress) on the levels of well-being. Baker and Williams' (2001) study of 78 fire -fighters had 39 from senior officer grade and 39 from 'watch member' grade (that is fire-fighters, leading fire-fighters and sub officers). It used three self-report questionnaires, one measuring social problem solving, one measuring organizational and incident related operational stress and the last measuring psychological distress relating to work in the fire service. The authors found that despite differences, in ranks fire personnel reported similar levels of organisational stress, self appraised problem solving and psychological distress. Additionally, fire -fighters of all ranks believed they had control, were confident, had low helplessness and approached rather than avoided problems. However, differences were found in organisational and incident related stressors between fire service ranks. The limitation of this study is that it was cross sectional so cannot assume a causal relationship, thus cannot verify whether psychological distress results from differences in social problem solving appraisal and work stress or vice versa. In addition, as some of the sub scale measures had low internal reliability scores, the researchers suggested findings should be treated with caution.

Research by Brown et al. (2002) in 248 Fire fighters in Northern Ireland, found overall that 'greater psychological distress was associated with greater frequency of incident related negative emotions, external locus of control, less task and emotion focused Coping and greater avoidance Coping'. More specifically, the study found individual's with external

locus of control had higher scores on GHQ when they were exposed to low frequency of trauma but when exposed to high frequency of trauma there was no association between GHQ scores and locus of control. Other findings were that low levels of trauma exposure were associated with greater emotion focused Coping resulting in less psychological distress, and higher levels of trauma exposure with greater task-focused Coping and lower psychological distress. This research also indicated that avoidance Coping (not emotion or task-focused Coping) mediated the relationship between locus of control and psychological distress. That is externals tended to use more avoidance Coping thus resulting in greater psychological distress. However, the authors caution regarding the generalizability of these findings in the study. They emphasise that this is a cross sectional study, thus causal relationships cannot be drawn between the variables. The measures of Coping and locus of control had low internal reliabilities when scored according to protocol, thus a study specific scoring protocol was used and only GHQ was used as an outcome measure, which may not be the best measure to detect trauma exposure. They advise other outcome measures should be used in future research. Despite these concerns, they conclude that this research replicates previous research with other samples (e.g. Israeli combat veterans).

A study by Haslam and Mallon (2003), again addressing PTSD, studied 31 fire personnel from the Midlands Fire and Rescue Service in the UK. PTSD was measured using the Post-traumatic Diagnostic Scale (PDS; Foa, 1995). The first of this two-part questionnaire was adapted to make it fire specific. This study suggested that fire fighters were at a risk of developing PTSD symptoms but that providing there were adequate support networks available, the severity and the development of these symptoms may be minimised. However, the study had only a small sample of volunteers and therefore the authors caution that the findings may not be representative and further longitudinal research is required to determine which factors cause symptoms of PTSD.



## **1.12 BASIS FOR THE CURRENT RESEARCH**

The majority of the research studies with regards to stress in the Fire service (throughout the world) have addressed psychological aspects of PTSD and CISD. Additionally, compared to the other emergency services, there is relatively little research within the Fire services in the UK.

However, stress can be studied by two principal approaches, by addressing significant traumatic personal life events or examining daily stressors (Hassles). The majority of the research studies available have investigated stress through analysing significant life events and their effect upon the individual (Kanner et al., 1981; Alexander, 1990, 1991; Pillow et al., 1996). The advantage of studying stress with respect to daily Hassles is, it gives a more accurate 'picture' of an individuals' level of well-being on a daily basis (De Longis, Folkman, and Lazarus, 1988; McCrae, 1990; Lavalley and Campbelle, 1995). Furthermore, the daily Hassles approach is thought to be more 'process centred', that is, frequent, repeated measures of subjective stress and well-being will give a greater understanding of the general stress process (Folkman et al., 1986; Lazarus, 1990; Watson 1990). Finally, examination of daily Hassles changes the focus from changes within the individuals' life experiences to the occurrence of daily demands, resources, and constraints that are working within the overall person-environment relationship.

Thus, the present research focuses on Daily Hassles and Uplifts and their effect on psychological well-being taking individuals differences into account. The author, to date, has not found research carried out on a longitudinal basis and addressing psychological well-being in Fire Services in the UK, using these measures. Finally, as far as the author is aware, there has been no research on a longitudinal basis based on the Cooper (1986) Occupational Stress Model in the Fire Service. This will result in this research contributing to knowledge.

# 2

## CHAPTER TWO

### INDIVIDUAL DIFFERENCES

#### 2.1 OVERVIEW OF CHAPTER TWO

Chapter Two begins by addressing the role of individual differences in the stress process; Direct, Confounding, Moderation and Mediation effects. It then describes individual characteristics, which are divided into demographic and dispositional characteristics. The demographic characteristics (number of years of service and marital status) are described briefly. Then the three individual difference characteristics in the proposed model of stress; Neuroticism (Negative Affectivity), Extraversion (Positive affectivity) and Mastery (a measure of personal control) are described in more detail. For each, the research in the area is described and then the rationale for using the particular measure in the current research is justified.

#### 2.2 JUSTIFICATION FOR THE INCLUSION OF THE INDIVIDUAL DIFFERENCE VARIABLES

The role of individual differences in the occupational stressor-strain relationship has become the focus of much research, with traits emerging as a key vulnerability factor (Wiebe & Smith, 1997). The current conceptualisation with respect to traits is the Five Factor Model (FFM). The FFM is based on 30 traits classified according to five global dimensions or factors: Extraversion, Neuroticism Conscientiousness, Agreeableness and Openness. The 'Big Five' are relatively enduring and transcend individual differences in age, sex and race and there is evidence to suggest that all five dimensions have a



biological-heritable basis (Costa and McCrae, 1992), suggesting a link to the physiological process underlying stress related illness and disease.

Studies indicate that individual differences play a major role as determinants of the nature and magnitude of responses to work stress (Parkes, 1990). For the current research the three individual difference characteristics (Neuroticism/Negative Affectivity (NA), Extraversion /Positive Affectivity (PA), and Mastery (control)) were chosen because firstly, the proposed model is adapting Cooper's (1986) and Williams and Cooper's (1998) models to the Fire service. Neuroticism and Mastery (control) are individual difference characteristics from Coopers' models, hence they have been incorporated. Secondly, Hart et al.'s (1995) model, which also underpins this research, incorporates Neuroticism and Extraversion. Additionally, previous research has indicated that several types of individual differences have been found to be important as mediators or as moderators in the work stress process (Parkes, 1990). For example, Spielberger, Gorsuch and Lushene (1970) have shown that NA can act as a moderator of stress-outcome relations. They considered NA to be a tendency to react adversely to social and psychological stressors. Since NA is a tendency to focus on the negative aspects of persons (including self) (Watson and Clark, 1984), to assess the impact of having a positive disposition, a measure of Extraversion (Positive Affectivity (PA)) should also be included. Previous research has found Extraversion to be positively correlated with subjective well-being (Costa and McCrae, 1980; Hotard et al. 1989), but also to have a moderating influence as found by Brough (1998) in an emergency service sample (the Police service). Finally, Mastery (control) was included not only because it was in Coopers' models but control is thought to be an influential variable in the experience of stress (for example Spector, 1982; 1986; 1989). Spector (1986) found that if an individual felt they had a high level of control, this was associated with several job outcomes, including Job Satisfaction, motivation and involvement amongst others.

### **2.3 THE ROLE OF INDIVIDUAL DIFFERENCES IN THE STRESS PROCESS**

There are four primary methods of influence by which various characteristics affect the stress and Coping process. These are Direct, Confounding, Moderating and Mediating effects. **Direct effects** are the simplest methods of influence and this is when a variable has a direct relationship with the outcome measure. This influence is independent of the



relationship between the outcome measure and any other influencing variable. Direct effects can be identified by correlational analysis. An example of such an effect is those individuals scoring high on negative affectivity (to be discussed later) also score high on a measure of psychiatric morbidity/ symptom checklist such as the General Health Questionnaire (Goldberg, 1972; Watson and Clark, 1984). Thus, it could seem that the individual characteristic of negative affectivity (NA) can be assumed to have a direct, adverse influence upon GHQ scores.

The second method of influence is the **Confounding** effect upon the outcome measure. This is when a relationship between a variable and the outcome measure is exaggerated or confounded by a direct relationship between this initial variable and a 'third' nuisance variable. This effect is usually identified in the literature through a series of 'inflated' correlation results. When the nuisance variable is controlled for, correlation scores between the target variables decrease (Costa & McCrae, 1987; Brief et al., 1988).

The third method of influence is when a variable 'exercises' a **Moderating** effect on the outcome variable. A moderator variable impacts on/effects the relationship between a variable and an outcome, e.g. high stress and reduced Work Performance. For example, if stress is the predictor, anxiety is the moderator and Work Performance is the outcome, then it could be that there is only a relationship between high stress and reduced Work Performance for people with high levels of anxiety, but not for people with low levels of anxiety (for example, Speilberger, Gorsuch and Lushene, 1970). In line with this, Parkes (1990) indicated the relationship between work demands and individual well-being was found to be stronger for individuals who scored highly upon a measure of NA. The level of NA in this circumstance exerts a moderating influence upon the relationship between work demands and well-being.

The last primary method of influence is the **Mediating** effect of a third variable. A mediator is a variable that is involved in a causal pathway between a predictor and an outcome. This third variable 'comes between' the two initial variables. For example, if stress is the predictor, anxiety is the mediator and Work Performance is the outcome, it could be that high stress leads to high anxiety and it is this that leads to reduced Work Performance. Thus, an individual with a generally positive or negative outlook will respond differently to adverse demands and this difference is significantly reflected in the outcome measure (Moyle, 1995; Terry et al., 1993).



These methods of influence are important as they are the processes by which various characteristics effect the stress process. It is hoped within the current research to examine whether the individual difference characteristics Neuroticism (NA), Extraversion (PA) and Mastery (control) have a moderating or mediating influence on the stress-outcome process. The same goes for Coping, discussed in chapter three.

## 2.4 INDIVIDUAL DIFFERENCE CHARACTERISTICS

According to Daniels, Jones and Perryman (2003) an individual difference can be defined as psychological variables upon which individuals differ. They suggest it is possible to differentiate three major classes of variables that reflect individual differences. The first of these are **Traits**, such as the Big Five personality factors of Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness . These, according to Daniels et al., (1997), are thought to be relatively impervious to change after the onset of early childhood. They are considered to have a major genetic component. The second major class are **Attitudes, beliefs and related concepts**, such as locus of control, Type A Behaviour Pattern, and self esteem . These variables are characterised as being more fluid than traits and, therefore more capable of changing after early adulthood; even if they do contain a moderate to large trait component (Dormann & Zapf, 2002). The final class of variables are the **State variables**, such as ‘mood’ and ‘emotions’ The term ‘emotion’ refers to feelings towards an event, object or person, whilst ‘mood’ refers to feelings that cannot necessarily be linked to a specific event object or person. The term ‘affect’ also needs to be explained in that it refers to a more general term that incorporates both ‘mood’ and ‘emotion’ (Parkinson, 1995). Daniels et al. (2004) indicate the importance of making this differentiation with regards individual differences, is that the more trait and attitudinal individual differences can be considered indices of stable cognitive ‘structures’ which provide a backdrop to the cognitive processes underlying the experience of stress. On the other hand, the state individual differences can be considered closest to the cognitive processes as these processes unfold (cf Lazarus, 1999). Furthermore, Daniels et al. acknowledge from their classification that some attitudes and states (e.g. Job Satisfaction, anger) can be studied as outcomes of the stress processes rather than the causes of stress. But they state many theoretical models of stress indicate that many supposed outcomes can influence some causes (Edwards, 1992) and that evidence indicates such outcomes

influence other attitudes, the interpretation of the stressfulness of psychosocial hazards and, possibly even the occurrences of some psychosocial hazards (Daniels and Guppy, 1997).

Previous research by Payne (1988) has classified some characteristics thought to have an influence into three main groups: **Genetic**, which consists of characteristics such as Physique, Constitution, Reactivity, Sex and Intelligence; **Acquired**, consisting of Social class, Education and Age; **Dispositional**, which consists of Trait anxiety/ Neuroticism, Extroversion, Locus of control, Coping style, Type A, Self Image/Esteem and Flexibility. These three distinctions can be divided into Demographic Characteristics (which include some of the variables in Payne's genetic and acquired classifications) and Dispositional characteristics.

The biodata that was 'allowed' to be collected on Fire personnel in the current research was limited. The researcher was advised, especially because of 'the uncertain climate' the Fire service was in at the time the research started, not to request any information that could identify an individual. This included 'age' and 'gender' for some Fire services and 'ethnicity' for all Fire services. Hence, due to the lack of basic personal information available, in the current research these demographic characteristics were not incorporated into the model. However, marital status and Serving years were measured and these will be described briefly in the next section. This is followed by the description of the Dispositional (Personality) based characteristics Neuroticism, Extraversion and Mastery.

## **2.5 DEMOGRAPHIC CHARACTERISTICS**

According to Daniels et al. (2004), demographic variables are distal indicators of individual differences in cognitive and perceptual processes, and even then, they are more likely to represent socio-cultural factors (c.f. Lazarus, 1999).

No demographic variables were included in the current proposed model of stress but they were controlled in analyses within the current research.



### **2.5.1 MARITAL STATUS**

There has been some research with regards to marital status. For example Gove (1972) found that married women have generally higher rates of mental illness, as compared to married men. Furthermore, men who are divorced or widowed generally have higher rates of mental illness, as compared with female equivalents. Thus this research suggests that being in a partnership of some kind is of benefit for male well-being while not being in a relationship is more beneficial for female well-being.

However there are also other studies, as those described next, that show the impact of work on marriage for Fire-fighters at a very generic level. For example, research by Noran (1995) on wives of US fire fighters found that fire fighters have a higher rate of divorce than the general population. Also the job is often more stressful for wives as they do not have the symbols, norms, and structures inherent in the fire fighter's society that encourage valour and serve as Coping tools. Additionally the wives do not have built – in support structures to cope with stress and this, combined with the husbands' general lack of self-disclosure, leaves wives feeling shut –out and alone.

A measure of marital status is generally included within most well –being investigations as with the current research.

### **2.5.2 NUMBER OF SERVING YEARS**

This measure was included in the current research as many Fire service personnel are known to go into the service as a 'job for life'. Research by Traut et al. (2000) in the Fire service has found that newer employees (0 to 3 years of service) are the most satisfied with their jobs. Those who have worked between 4 to 10 years had the greatest satisfaction with their supervisors and overall Job Satisfaction whereas those working 16 through to 20 years were less positive (but this was not statistically significant). This research did not support the standard assumption that Job Satisfaction increases with the years of service. Rather it found that the most satisfied employees were those with the fewest years of service, even after controlling for rank. Other research by Beaton et al. (1998) on Fire fighters and stress found neither years of service nor trauma in the previous six months predicted future changes in self-reports of post-traumatic stress symptomatology.

## **2.6 DISPOSITIONAL CHARACTERISTICS:**

The next section will address the dispositional characteristics in the current research that are included in the proposed model of stress; Neuroticism (Negative affectivity), Extraversion (Positive affectivity) and Mastery (a measure of control).

### **2.6.1 RELATIONSHIP BETWEEN NEUROTICISM (NEGATIVE AFFECTIVITY) AND EXTRAVERSION (POSITIVE AFFECTIVITY)**

Eysenck (1947) first put forward the existence of two factors, Neuroticism (emotionality or stability –instability), and Extraversion-Introversion. He suggested these contributed more to the description of personality than any other two factors outside the cognitive field (Eysenck and Eysenck, 1985).

Watson and Clark's (1984) extensive investigations of self reported transient mood have repeatedly found two independent factors; positive affect and negative affect to be the most important dimensions of subjective emotional experience (Costa & McCrae, 1980). They suggest Positive Affect reflects the extent to which a person is feeling a zest for life, feeling up versus down. High positive affect is defined by words such as active, excited, alert, enthusiastic and strong, whereas low positive affect is best characterised by terms reflecting fatigue such as sluggish, and drowsy. Furthermore, positive affect is related to frequency of contact with friends and relatives, making new acquaintances, attending or participating in sporting events, involvement in social organisations and overall patterns of social interactions (Watson and Clark, 1984). These findings led Costa & McCrae (1980) to hypothesize that Positive Affect and Negative Affect might be differentially related to the two higher order dimensions common to most personality inventories; Extraversion and Neuroticism (NA). Watson and Clark (1984) confirmed that this hypothesis was strongly supported and expanded that Extraversion was related to positive affect but not negative affect and Neuroticism was found to be more highly correlated with negative affect. Additionally, this convergent / discriminant pattern was maintained even when the mood measures were taken 10 years after the personality tests. Costa & McCrae's findings were replicated by Warr et al. (1987).



Furthermore, Watson and Tellegen (1985) and Brief et al. (1988) found that Negative Affectivity correlated only weakly with Positive Affectivity, and the two measures were not at opposite ends of a continuum, but portrayed two individual continuums. A number of studies for example, Spielberger et al. (1970) and Zeidner (1990) have found a negative association between both Negative Affectivity and Positive Affectivity and the demographic variable age, with anxiety levels tending to decrease as age increases. Other studies have shown that Negative Affectivity has also been positively linked with physiological outcomes such as cardiovascular angina and somatic complaints. Other research has found Extraversion to be positively correlated with subjective well-being (Costa & McCrae, 1980; Hotard et al., 1989), as well as negatively associated with physiological outcomes such as coronary heart disease (Friedman and Booth-Kewley, 1987).

Thus within the current research the terms Neuroticism and Negative Affectivity (NA) and Extraversion and Positive Affectivity (PA) are used interchangeably.

### **2.6.2 NEUROTICISM (NEGATIVE AFFECTIVITY)**

As mentioned previously, Watson and Clark (1984) suggested that distinct and segregated literatures address a number of specific personality measures, that despite dissimilar names, inter-correlate so highly that they must be considered measures of the same construct. Following Tellegen (1982), Watson and Clark (1984) called this construct Negative Affectivity. Similarly they suggest that Eysenck and Eysenck (1968) have done extensive research in the area, and have traditionally called this dimension Neuroticism. According to Eysenck and Eysenck (1964), Neuroticism, or more specifically a person who scores high on this scale, can be defined in one word as a person who is a worrier. Their main characteristic is a constant preoccupation with things that might go wrong and a strong emotional reaction of anxiety to these thoughts. The typical high scorer is anxious, moody, frequently depressed. They are likely to sleep badly, suffer from various psychosomatic disorders, be overly emotional, react overly strongly to many stimuli, find it difficult to get back on an even keel after each emotionally arousing experience, and their strong emotional reactions interfere with proper adjustment, thus making them react in an irrational, sometimes rigid way (Eysenck and Eysenck, 1985). Eysenck and Eysenck



(1976) also put forward the term 'emotionality', to describe Neuroticism, this according to Watson and Clark (1984) is even more similar to their term Negative Affectivity (NA).

Additionally, Watson and Clark (1984) state that although Negative affectivity has several aspects, for example negative mood and cognitions, and low self-esteem, it is a unitary dimension. For this reason they prefer the term Negative Affectivity over Neuroticism, which is multi faceted (although the Eysencks measure is not; Eysenck and Eysenck, 1968). Furthermore they imply NA is not the only contributor to developing a neurosis, a fact that the Eysencks acknowledged and that has perhaps contributed to their suggesting the alternative label emotionality.

Watson and Clark (1984) view Negative Affectivity as a mood dispositional dimension. It reflects pervasive individual differences in negative emotionality and self concept. High NA individuals tend to be distressed and upset and have a negative view of self, where as those low on this dimension are relatively content and secure and satisfied with themselves.

More recent research by Grant and Langan-Fox (2007) suggests findings for Neuroticism are generally consistent with those of Moyle (1995), who found that negative affectivity had a direct effect on symptom reporting and that the effect of negative affectivity on Job Satisfaction was mediated by occupational stress. Thus the results suggested that the role of Neuroticism in the occupational stressor-strain relationship is likely to depend on the outcome variable measured and that no –one model is sufficient to explain the role of this trait in the occupational stressor strain relationship.

Parkes (1990) examined NA as an index of reactivity in the stress- outcome relationship and as a confounding variable. She found NA to be a significant moderator variable; high NA subjects showed greater reactivity to work demand than low NA subjects. Also, that NA inflated associations between work perceptions and affective symptoms, thus showing her results to be consistent with the work Brief et al., (1988) in that NA tended to inflate relations between measures of work stress and affective outcome.

Some studies have found NA to be consistent across situations (especially where an individuals' self esteem is being threatened) as well as over time (Farber and Spence, 1956; Spielberger et al., 1979). However other researchers, such as Watson and Clark



(1984), have suggested “higher NA individuals are more likely to report distress, discomfort, and dissatisfaction over time and regardless of the situation, even in the absence of any overt or objective source of stress,” Watson and Clark, (1984, p483). Research such as this indicates that it is important within self report stress and Coping investigations, that the NA variable should be included, in order to provide an accurate estimation of the stress experienced (Brief et al., 1988; Parkes and Von Rabenau, 1993; Moyle, 1995).

### **2.6.3 FIRE-SERVICE SPECIFIC RESEARCH AND NEUROTICISM (NA)**

Research by Beaton, Murphy and Pike (1995) looked at work and non-work stressors, negative affective states and pain complaints amongst fire-fighters and paramedics with a large sample (N= 2008). They found that five occupational stressors were associated with respondents’ pain complaints. Also that negative affective states mediated the relationships between work and non work variables and pain complaint outcomes. This study suggests that these findings have implications for the development of preventive interventions for fire fighters and paramedics as well as other emergency services.

Research by Hart et al. (1999) on the Police service addressed negative affectivity and its influence on the measurement of daily Hassles (for example, Costa and McCrae, 1990; Watson, 1990). Their findings supported Lazarus’ (1990a) contention that daily Hassles make a separate and meaningful contribution to psychological well-being, over and above effects of Neuroticism (also known as negative affect; Costa and McCrae, 1990). Hart (1999) states this does not mean that NA is unrelated to daily Hassles, as in his study Neuroticism accounted for between 11% and 19% of the variance in work Hassles, but the experience of daily Hassles is determined by the environment as well as person characteristics ( Hart et al., 1996).

Roy (2004) addressed cortisol responses to a laboratory stress protocol in 82 fire-fighters. The results showed larger mean cortisol responses were associated with lower reports of recent stress exposure, lower negative affect scores and a Coping style that was characterised by less experience of anger, more control over anger expression, and a tendency to screen out threatening information in stressful situations. Thus, increased cortisol activity was associated with increased recent stress exposure and a more adaptive



behaviour style than for those whose cortisol levels fell or were largely unchanged in response to a laboratory stressor. It could be hypothesised, this could have implications in a work setting to pin point those fire fighters who are more likely to have a less adaptive behaviour style, and thus be encouraged to develop one.

Brough's (2005) study of New Zealand Fire, Police and Ambulance service found that all three services produced similar scores on the experience of Neuroticism and Job Satisfaction and that Neuroticism was a predictor of work well-being. Additionally, that Neuroticism was a strong negative predictor of psychological well-being, replicating the results of previous investigations (Brough and Kelling, 2002; Mansell & Brough, 2005). Furthermore, Brough (2005) suggests (in line with other researchers e.g. Mansell & Brough, 2005; Spector et al., 2000) it is important to control for Neuroticism in self report estimations of psychological outcomes.

A more recent study by De Gaglia (2006) investigated the effects of a small group crisis intervention (defusing) on negative affect and agreeableness to seeking assistance from mental health services. It analysed the impacts of traumatic incidents and the effects of a small group intervention on full time fire/rescue professionals. The results indicated that the small group intervention significantly lowered the composite negative affective score. Post intervention fire/rescue professionals agreed they were more likely to seek out future mental health services and future small group interventions. This study shows the positive impact interventions can have for psychological well-being.

#### **2.6.4 EXTRAVERSION (POSITIVE AFFECTIVITY)**

Eysenck and Eysenck (1968) described an Extravert as sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by themselves. Extraverts crave excitement, take chances, often stick their necks out, act on the spur of the moment and are generally an impulsive individual. They are fond of practical jokes, generally like change, are carefree, easy going, optimistic, and like to 'laugh and be merry'. They prefer to keep moving and doing things, tend to be aggressive and lose their temper quickly. Altogether their feelings are not kept under tight control and they are not always a reliable person. Costa & McCrae's (1980) description of an Extravert is in line with this.



It has been suggested by several authors that possessing a positive disposition may also significantly influence the stress and Coping process. For example, Scheier and Carver (1985) reported upon the individuals' feelings of both optimism and pessimism as mediating factors within the stress process. These authors suggest that such measures tend to be relatively stable across time and can therefore, have significant influence upon an individual's general outlook, their perception of events and ultimately, their health outcomes; a few other studies have also offered some support for this hypothesis (for example, Carver et al., 1979; 1979b; Bandura and Cervone, 1983).

Other studies such as Folkman and Lazarus (1980) and Scheier et al., (1985) found optimistic individuals generally tend to adopt active problem focused Coping strategies and are more likely to seek social support as compared to their more pessimistic counterparts. In addition, other researchers (for example, Izard and Tomkins, 1966; Lazarus et al., 1980; Scheier and Carver 1985 and Brief et al., 1988) have also suggested that positive expectancies may have an influence on the stress and Coping process. Lazarus et al. (1980) suggest three ways in which positive emotions influence the Coping process, via acting as 'breathers' (providing individuals with a short rest period from Coping demands), 'sustainers' (encouraging persistence with Coping methods in taxing circumstances), and finally acting as 'restorers' (facilitating recovery from harm and/or loss).

The model of Psychological Distress and Well-being (Hart et al., 1995) suggests that PA and NA are determined by two separate pathways. The PA pathway was influenced by Extraversion and directly effected by the use of problem focussed Coping and the experience of police Uplifts. The NA path was strongly influenced by Neuroticism which directly effected the use of emotion focussed Coping and the experience of police Hassles. In line with this, research by Hart et al. (1995) showed strong empirical support for the notion that personality characteristics, Coping strategies and police work experiences operate along two separate paths in determining psychological well-being. Their findings indicate that Neuroticism, emotion focussed Coping, adverse life-events and psychological distress tend to correlate with each other and these are correlations are independent of those typically found between Extraversion, problem focused Coping, beneficial life-events and well-being (Costa & McCrae, 1980, 1985; Hart, 1994; Hart et al., 1993,1994(a); Headey and Wearing, 1989,1990).



Research with respect to the Five Factor Model (FFM) has suggested that Extraversion (and Conscientiousness, Agreeableness and Openness) is positively related to health and well-being where as Neuroticism is negatively related to health and well –being. For example, Godwin and Engstrom (2002) found that Extraversion (and Conscientiousness, Agreeableness and Openness) were associated with better perceived health among healthy people in the general population and Neuroticism was associated with poorer perceived health in this group. Among unhealthy people, high Extraversion (and Conscientiousness, Agreeableness and Openness) and low Neuroticism were associated with better perceived health.

#### **2.6.5 FIRE-SERVICE SPECIFIC RESEARCH AND EXTRAVERSION (PA)**

Although there is relatively less research looking at positive affectivity compared with negative affectivity, most research considers the two together or negative affectivity only. However, very recently two studies by Erez, Misangyi, Vilmos and Johnson (2008) looked at charismatic leaders and the transferral of affect. They found that leaders' charisma was positively associated with followers' positive affect and negatively associated with followers' negative affect. That is, it showed that fire-fighters under the command of a charismatic officer were happier than those under a non-charismatic officer and that these relationships were mediated by the leaders' positive affect and a tendency to express positivity. Such findings could, hypothetically, have implications when promotions are considered at managerial level, where individuals are in charge of for example several watches.

Eysenck and Eysenck (1985, p 329) concluded that “it appears that different kinds of occupation and occupational success are both determined to some extent by personality. For example, a car worker on an assembly line has minimal control over his work activities, whereas a university lecturer has greater control and personality will be a more consequential determinant of Job Satisfaction when severe constraints exist. However, they suggest that the opposite can be said to be true also, that is, where there are few external demands, personality (and ability) factors may be primary causes of success or failure. Also that it may be argued that personality factors are more relevant under such conditions, thus indicating the importance of measuring personality”.



## **2.6.6 RATIONALE FOR USING THE EYSENCK AND EYSENCK (1975) PERSONALITY INVENTORY**

The Eysenck Personality Inventory is probably the most frequently used scale for measuring Extraversion and Neuroticism because it embodies the results of forty years of development and many hundreds and thousands of psychometric and experimental studies carried out in many different countries. The scale attempts to measure the major dimensions of personality as they have emerged from self- ratings, ratings by friends or acquaintances, observational studies, experimental investigations, psychophysiological experiments and biochemical analyses (Eysenck and Eysenck, 1985). Additionally, the Eysenck Personality inventory has been subjected to extensive investigation and is robust . Furthermore, many researchers (for example, Parkes, 1990; 1994; Parkes and Von Rabenau, 1993; Moyle, 1995) accept that one of the most used measures of Negative Affectivity is the Neuroticism scale developed by Eysenck and Eysenck (1968). Additionally, although specific measures for estimating levels of PA exist (Tellegen, 1982; Scheir and Carver, 1985), many investigators use a measure of Extraversion as an indicator of PA (Eysenck and Eysenck, 1968).

Furthermore, the Eysenck and Eysenck (1964) Personality Inventory measure has been widely used and extensively validated in the United Kingdom (Eysenck and Eysenck, 1976) and it is one of a number of scales that can be used to assess the NA construct (Watson and Clark, 1984), and Trait NA (Watson et al., 1987). Similarly, Trait PA can be measured with the Extraversion instrument from the Eysenck and Eysenck (1964) inventory, and was used as a measure of PA in the work of Watson, Pennebaker, and their colleagues (e.g. Watson and Pennebaker, 1987; see review by Costa & McCrae, 1980).

In the current study Negative and Positive Affectivity were measured by a shortened version of the Neuroticism and Extraversion scale. The original scale has 23 items, but this scale was thought to be too long for the current research. Thus in the current research a 10 item version of the Eysenck and Eysenck (1964) 12 item scale was used, based on the results of Sale et al.'s (2000) study. In Sale's study, which used the Eysenck and Eysenck (1964) 12 item scale, the Cronbachs alpha for the Extraversion scale was 0.74 and 0.65 for the Neuroticism scale. He found by removing one item from each scale, it increased the



reliability of the scale markedly. It is this 10 item scale that was used in the current research. The scale is scored such that, the higher the score, the more neurotic an individual is and their disposition tends towards Negative Affectivity. The higher the score, the more extravert an individual is and their disposition tends towards Positive Affectivity.

## **2.7 MASTERY (PERSONAL CONTROL)**

A measure of the perception of control has been included in numerous investigations as it is thought to be an influential variable in the experience of stress (for example, Spector, 1982; 1986; 1988; Jackson, 1989; Parkes 1991; Jex and Spector, 1996). For example, Spector (1986) found that if an individual felt they had a high level of control, this was associated with, amongst other factors, Job Satisfaction, involvement and motivation. Other research has studied the effects of employee control by addressing organisational practices such as participative decision making and job autonomy (Miller and Monge, 1986; Cotton et al., 1988; Neuman et al., 1989). The study by Macy et al. (1989) showed there was a direct effect of participative decision making upon employee well-being.

Guttman (1974) specifies two patterns of Mastery: active Mastery and passive patterns of Mastery. According to Guttman, individuals shift between these patterns of Mastery as they age. That is, younger individuals generally show active Mastery patterns, whilst older individuals largely show passive Mastery patterns. Active Mastery is described as an active, often aggressive, move toward autonomy and the control of external events. Whereas Passive Mastery is described as the use of self control and the inhibition of aggression to achieve individual security and well-being (Brough, 1998). These terms are complimentary to Rotter's (1966) description of internal and external locus of control. However, Guttman's description is largely based on cross-sectional research and replication of this two dimensional Mastery construct has not been widely attempted.

However, Pearlin and Schloer (1976; 1978) described a number of 'psychological resources' or personal characteristics which an individual can draw upon to assist in the stress and Coping process. One such characteristic is a sense of personal control called Mastery. They state 'psychological resources' are the personality characteristics that people draw upon to help them withstand threats posed by events and objects in their environment. That is, 'Resources' in this context refer not to what people do, but to what is



available to them in developing their Coping repertoires. According to Pearlin and Schooler these resources reside within people and can form formidable barriers to the stressful consequences of social strain. The three psychological resources that Pearlin and Schooler have analysed and have found to have Coping functions are self-esteem, self-denigration and Mastery. Self-esteem refers to the positiveness of one's attitude toward oneself and is a factor formed from items in the Rosenberg (1965) scale. Self –denigration is an independent factor derived from the same original pool of items, and indicates the extent to which one holds negative attitudes toward oneself. Mastery is defined by Pearlin and Schooler (1978), as 'the extent to which one regards one's life-chances as being under one's own control in contrast to being fatalistically ruled'. Other aspects of personality that they examined were measures of denial, general tendencies toward escapism, and dispositions to move toward or away from people when troubled, but these were found to have no Coping functions.

According to Pearlin et al. (1976; 1978) Mastery has two opposing qualities; a sense of personal and external controlling forces. A personal sense of Mastery allows effective Coping with situations, within both an individual's personal and occupational life. Furthermore, they suggest the presence of an individual sense of Mastery allows the person to cope with distressing situations by the direct manipulation of the circumstances. Whilst an individual lacking in a sense of Mastery is more likely to accept the distressing circumstance as inevitable/ unable to be changed and thus will focus upon adaptation to the stressor. Additionally, the authors state that the demographic characteristics of age, sex and educational achievement, pertaining to an individual's socio-economic status were significantly correlated with a sense of Mastery. Thus, an individual with a high socio-economic status (i.e. better education and higher income) had a strong sense of (internal) Mastery and an individual with a lower socio- economic status tended to have a weak sense of Mastery. That is a sense of personal uncontrollability of the situation they are experiencing. With regards to age, the authors suggest younger individuals are more likely than the older to be self-denigrating, but they are also more apt than the older to entertain a sense of Mastery.

### **2.7.1 OCCUPATION RELATED RESEARCH USING THE MASTERY CONCEPT**

Pearlin et al.'s (1976; 1978) Mastery scale has been used in various stress and Coping investigations. For example, Folkman et al. (1986a, 1986b) found that the presence of a sense of individual Mastery was found to independently influence both the individual's appraisal and Coping processes, and was also positively associated with increased general health. A study by Light et al. (1986) concluded that the presence of Mastery significantly influenced an individual's Competence, achievement and adaptive functioning, whilst a weak sense of Mastery (external beliefs) was related to the negative effects of anxiety, depression and Neuroticism. When a measure of Mastery has been applied in an occupational setting, results, as described in the Light et al. (1986) study, have been replicated (for example, Franks and Faux, 1990; Alexander and Wells, 1991; Guppy and Weatherstone, 1997).

Frone, Russell and Cooper's (1991) study of 596 employed individuals from a random community sample looked at the moderating influence of Mastery, social support, active Coping and self-focussed attention. They found self-focussed attention was the only consistent moderator of the relationships between stressors and psychological distress. Also that high levels of self-focussed attention exacerbated the stressor-distress relationship. Thus, indicating perhaps Mastery does not have an influence on the relationship between stressors and psychological distress.

Begley and Boyd (1992) in a study of 235 Chief Executive Officers (CEO) looked at whether certain personal orientations reduce the severity of stress by reducing the number of situations perceived as threatening. The survey included a measure of work stress, psychological resources, Coping responses, physical health and mental health. The results indicated a distinction between psychological resources and Coping responses. They suggest two psychological resources, higher Mastery and more firmly held religious beliefs, lessened health problems by having a direct impact on health reducing stress.

Antonioni (1996) investigated two strategies for responding to stressors (role ambiguity, role conflict, quantitative work overload and time pressure); Managing conflict and Clarifying work expectations in 120 middle managers whose companies had downsized.



They used amongst other measures, a Self-report Mastery survey. The results indicated that the two stress management strategies significantly predict lower scores on the specific stressors and on overall stress reactions. Thus, one can conclude that these strategies give individuals a sense of control (by being able to manage conflict and clarifying work expectations). Thus helping to increase a perception of ones Mastery.

Another study by Parker and Sprigg (1999) used a sample of 268 production employees and extended the work of Karasek's (1979) demands-control model of stress. Karasek and Theorell (1990) argued that accumulated strain inhibits the development of Mastery and reduces the perceptions of stress. The results of this study indicated (amongst other things), that perceived Mastery was associated with lower job strain, however, the development of a sense of Mastery does not appear to be the only mechanism underpinning the lowering of strain. Additionally, demands and control can influence learning as proposed in the dynamic version of the demands-control model and that proactive personality plays an important moderating role. A limitation of this study is the fact that it is cross-sectional in design and thus dynamic and reciprocal influences between the work environment and learning cannot be investigated which would be possible with a longitudinal design.

Other related research using the Mastery concept is that by Van Yperen, Nico and Jannssen (2002) who looked at dispositional goal orientation, as an explanation for variation in responses to high job demands in 322 university employees. The scale used to measure Mastery was 11 items from the Task and Ego Orientation in Sport Questionnaire (TEOSQ), developed by Duda (2001); extended and applied to the context of work by Van Yperen and Diderich (1998). They found that job demands were positively related to fatigue for all combinations of goal orientation. Only when an individual's performance orientation was stronger and his or her Mastery orientation was weaker, were higher perceived job demands accompanied by a decline in Job Satisfaction. The authors suggest this study has implications for managerial level jobs, in that there is strong empirical evidence for the positive effects of Mastery orientation. That is, Mastery orientated individuals tend to deal more adaptively with high demand jobs.

The current author could not find any studies using Mastery as a measure of personal control in the Fire services and on a longitudinal basis. Thus it was seen as valuable to incorporate this measure in the current research. This may enable us to gain empirical

evidence of whether or not there are beneficial qualities of Mastery on the stressor-strain relationship.

### **2.7.2 RATIONALE FOR USING THE PEARLIN AND SCHOOLER (1976; 1978) MASTERY SCALE**

Pearlin and Schooler (1978) developed a 7-item scale to measure Mastery. The original 7 item scale had a Cronbachs alpha of 0.80 (Thoits, 1987). Research by Guppy et al. (2004) showed that three of the seven items were most reliable for measuring personal control. Additionally, Guppy et al. (2004) made these 3 items more work specific by incorporating the word 'work' in each item. For example, 'I have little control over the things that happen to me at work'. Furthermore found internal consistencies for three different samples of 0.71, 0.86 and 0.75 using the 3 item scale, showing that this shorter version is reliable. The 3 item version of the Mastery scale was thought more appropriate since the items are worded to be 'work' specific and the current research is addressing personal control at 'work'. A low score on this scale would indicate a high degree of personal Mastery (that is personal control at work).

## **2.8 SUMMARY**

The three individual differences; dispositional characteristics of Neuroticism (Negative Affectivity), Extraversion (Positive Affectivity) and Mastery (Personal control) are considered to have an influence on the stress-strain relationship and thus an impact on the well-being of an individual. Much research acknowledges this influence and has attempted to control for and measure this influence, (For example, Daniels and Guppy, 1992; 1994; Moyle, 1995; 1997 ; Guppy and Weatherstone, 1997). However, there are very few studies within the Fire service that have included at least one of these measures (for example, Brough, 2005) and the author is not aware of any that have included all three. Therefore, it is hoped that the current research will enable us to gain an understanding with respect to these individual difference characteristics and their influence on the stress process. That is, it is hoped to examine whether any of these individual difference characteristics will have a moderating or mediating influence on the stress – outcome process. Additionally, although neither of the demographic variables; Marital status nor the Number of years of service



have been incorporated into the proposed model of stress, they will be controlled for in analyses.

Another individual difference characteristic that has been the focus of much research and may have a significant influence on the stressor-strain relationship is Coping. The next chapter is devoted to addressing the concept of Coping.

# 3

## CHAPTER THREE

### COPING

#### 3.1 OVERVIEW OF CHAPTER THREE:

The chapter begins by addressing Coping by mentioning influential models of Coping including the Coping theory of Lazarus (1966; 1981; 1985) and the Occupational specific Coping theory of Cox (1987), then extends to refer to the various issues related to measurement of Coping and provides the rationale for using the measures in the current study. Finally, the chapter closes with a review of Coping research in the Emergency services.

#### 3.2 INTRODUCTION:

For the past 40 years the concept of Coping has been central to the area of work stress (Dewe, 2004). Coping has been defined as the 'cognitive and behavioural efforts a person makes to manage the demands that tax or exceed his or her personal resources' (Lazarus, 1991). However research has indicated that the relationship is far more complex than this.

Early researchers such as Kobasa (1979) concentrated on the trait/style- orientated approach that viewed Coping as a structural or personality characteristic. This approach had many limitations; according to Lazarus (1999), maybe the most important was that it relied only on a trait to explain the Coping style which may not represent the way in which a person would actually cope in different contexts and at various times. This view also oversimplified the rich and varied kinds of Coping thoughts, actions and strategies people employ under stress (Lazarus, 1999). It ignored the goal-orientated intentions and integrative strategies that may underlie a person's motivation to deal with harm, threat and



challenge (Laux and Weber, 1991). Additionally there is relatively little evidence showing this approach is able to predict behaviour on a long term basis (Folkman, 1982).

Contemporary research views Coping as a 'process' that people use to manage the demands of stressful events. This process-orientated approach emphasises the context and Coping is viewed as a response by the individual to the psychological and environmental demands of specific stressful encounters (a transactional view). Some of the most influential proponents of this transactional view are Lazarus and his colleagues. Their transactional model of stress and Coping is derived from a large body of research and suggests that response to an environmental challenge is largely determined by an individual's perception of the event .

### **3.3 THEORY OF PSYCHOLOGICAL STRESS AND COPING (LAZARUS,1966; LAZARUS AND FOLKMAN, 1984)**

This theory takes a transactional view of Coping in that the person and the environment are viewed as being in a dynamic, mutually reciprocal, bidirectional relationship. The theory identifies two processes; Cognitive Appraisal and Coping as critical mediators of stressful person-environment relationships and their immediate and long term outcomes (Lazarus & Folkman, 1986).

Cognitive appraisal is defined as the process through which the person evaluates whether a particular encounter with the environment is relevant to his or her well-being and, if so, in what way. There are two kinds of cognitive appraisal: Primary Appraisal and Secondary appraisal. According to Lazarus, in Primary Appraisal a person evaluates whether he or she has anything at stake in the encounter. For example is there potential harm or benefit to self-esteem. Lazarus proposes Coping entails using a range of personality characteristics including values, commitments, goals, and beliefs about oneself and the world that help define the stakes that the person identifies as having relevance to well-being in specific stressful transactions. In Secondary Appraisal, according to Lazarus, the person evaluates what could possibly be done to overcome or prevent harm or to improve the prospects for benefit. Thus various Coping options are evaluated such as changing the situation, accepting it, seeking more information etc.

Coping is defined 'as the person's constantly changing cognitive and behavioural efforts to manage (reduce, minimize, master or tolerate) specific external and/or internal demands (of the person-environment transaction) that are appraised as taxing or exceeding the person's resources' (Lazarus, 1966; Lazarus et al., 1980; Lazarus, 1987). According to Folkman et al. (1986), there are three key features that encompass this definition. First, it is process orientated, meaning that it focuses on what the person actually thinks and does in a specific stressful encounter, and how this changes as the encounter unfolds. (This is different to the trait approach which emphasises what the person does and thus indicates stability rather than change). Second, it is contextual, that is, influenced by the person's appraisal of the actual demands in the encounter and resources for managing them. (The emphasis on context means that an individual and the situation variables together shape the Coping efforts). Third, they make no prior assumptions about what constitutes good or bad Coping. Coping is defined as a persons' efforts to manage demands, whether or not the efforts are successful.

Lazarus (1966) also suggested Coping Reactions could be divided into two groups:

*Direct Action orientated and Purely Cognitive defensive behaviours.* The Direct action orientated behaviours try to reduce the threatening stimuli by directly influencing the conditions that give rise to that threat. These Direct action dispositions are further divided into four sub groups. These are actions aimed at *Strengthening the individual's resources against Harm, Attack, Avoidance and Inaction.*

The second group of Coping reactions are *Cognitive – Defensive behaviours.* These are also known as *Defensive reappraisals*, and involve cognitive behaviours where the individual tries to find ways to deceive him/herself about the conditions of the threat. According to Lazarus these are behaviours such as denial, isolation, and rationalisation. He further expands suggesting the use of the term 'reappraisal' to indicate that the experience of threat/stress is based on an ongoing continuous process of cognitive appraisal (Lazarus, 1966). Thus according to Folkman et al. (1986) in any encounter both Primary and Secondary appraisals are combined to determine whether the person-environment transaction is regarded as significant for well-being. Also, whether it is primarily threatening (the possibility of causing harm or loss) or is challenging (the possibility of allowing Mastery or benefit). Depending on this appraisal process, appropriate Coping functions are utilised.



### 3.3.1 PROBLEM FOCUSED AND EMOTION FOCUSED

Coping has two vital functions, dealing with the problem that is causing the distress (problem-focused Coping) and regulating stressful emotions (emotion-focused Coping) (Folkman et al., 1986; Lazarus & Folkman, 1984b). Problem focused types of Coping are related to the action –orientated Coping behaviours and involve the individual trying to manage or alter the stressful situation or encounter. They include, for example, aggressive interpersonal effort to alter the situation, also cool, rational, deliberate efforts to problem solve (Lazarus et al., 1980) and also seeking additional information and advice about the situation (Dewe & Guest, 1990 Edwards and Baglioni, 1993). Emotion focused types of Coping are related to the cognitive-defensive behaviours. They involve trying to regulate the emotions that arise due to the stressful situation/ encounter to make the individual feel better but only for a short time. They include, for example, distancing, seeking social support, escape, avoidance and positive reappraisal (Lazarus et al., 1980; Lazarus and Folkman, 1984).

Furthermore, although Lazarus and his colleagues have proposed the two major functions of Coping, they observe that the two forms of Coping are not exhibited independently in any given stressful encounter. Instead, in a stressful encounter both forms of Coping behaviour are used by individuals (Folkman & Lazarus, 1980; 1985).

Additionally, Folkman et al. (1986), based on previous research on the relations between secondary appraisal (consisting of evaluations of Coping resources, constraints and options) and Coping (Folkman & Lazarus, 1980, 1985), found the following: participants used more problem–focused forms of Coping that kept them focused on the situation in encounters they appraised as changeable. That is, strategies such as confrontative Coping, accepting responsibility, planful problem solving and positive re-appraisal. In contrast, more emotion focused Coping was used by participants in situations they appraised as having to be accepted. That is, Coping strategies such as distancing and escape-avoidance. These forms of Coping allowed the person not to focus on the stressful situation. Additionally, they explain appraisals that involve delaying or inhibiting actions needing more information before acting and having to hold back from acting were both associated



with efforts to exercise self control, but the use of self control may serve different functions in the two kinds of encounters.

Folkman et al. (1986) expand that Cognitive Appraisal and Coping are transactional variables because they refer not only to the environment or to the individual alone, but to the integration of both in a given transaction. That is, an Appraisal of threat is a function of a specific set of environmental conditions that are appraised by a particular individual with particular psychological characteristics. Similarly, Coping consists of the particular thoughts and behaviours a person is using to manage the demands of a particular person-environment transaction that has relevance to that persons' well-being.

One of the main criticisms of this model has been the distinction between emotion focused and problem focused Coping and its apparent lack of predictive power with respect to future Coping behaviour (Dewe Cox and Ferguson, 1993; Dewe and Guest, 1990). Furthermore, Dewe and Guest (1990) indicate this distinction does not allow to fully measure and account for a wide range of Coping behaviours commonly exhibited. However, despite these criticisms their model has been one of the most influential models of stress and Coping to date and it underlies the contemporary transactional approach to the description and measurement of Coping behaviours.

A study relevant to the current research is that of Parkes (1990) who examined whether work-related Coping showed main or interactive effects in relation to mental health outcomes. Parkes' study specifically addressed whether active, problem focused Coping (measured by Direct coping measure) would moderate work-stress effect. Also, suppression (an emotion-focused form of Coping characterised by restraint, withdrawal, and ignoring the problem) would show an overall main effect. In main (or additive) models of Coping, relations between Coping and outcomes are considered to be independent of the level of stress (Billings and Moos, 1981; Folkman and Lazarus, 1985). In contrast, in interactive models, Coping is regarded as a moderator variable, which influences relations between stress and outcome rather than showing an overall effect Pearlman et al. (1981). The results indicated a main effect for suppression (high levels of suppression being associated with low GHQ scores) and showed Direct coping moderated relationships between perceived environmental stressors and GHQ scores. Parkes concluded that her study gives evidence that individual Coping efforts can alleviate the effects of work related stress (Latack, 1986; Osipow & Davis, 1988).



### **3.4 OCCUPATIONAL SPECIFIC COPING THEORY:**

Coping from an organisational perspective has been defined by Dewe et al. (1993) as ‘the cognitions and behaviours, adopted by the individual following the recognition of a stressful encounter, that are in some way designed to deal with that encounter or its consequences’ (Dewe at al., 1993 ; p7).

There are many occupational specific Coping theories. The theory that will be described in the next section will be the Discrepancy and Rational Problem Solving Coping theory of Cox and Macaky (1981). This is a theory that has been applied successfully in an organisational setting and, as the title indicates, entails a problem solving approach.

#### **3.4.1 COX’S DISCREPANCY AND RATIONAL PROBLEM SOLVING COPING THEORY (1981)**

Cox and his colleagues put forward the Discrepancy Theory to study occupational related Coping behaviour (Cox and Mackay, 1981). It is a transactional theory that takes account of an individuals’ interaction with their environment, both in the stress and Coping process (Cox, 1987).

The term ‘discrepancy’ in this context is used to highlight the imbalance between the demands of the encounter and the individuals’ resources and abilities to deal with the consequences of the encounter. Cox’s model of Stress and Coping proposes that there is a inverse relationship between the individuals’ capabilities and the stressor. That is, as levels of stress increase, the individual’s ability to cope with and manage the stress decreases. This model takes into account mediating effects of work load, training, and social support gained from work colleagues as well as the use of drugs and counselling to help with Coping.

Cox (1987) accepts and reinforces the fact that his model closely follows the processes of primary and secondary cognitive appraisal put forward by Folkman and Lazarus (1980). Cox (inline with Lazarus and Folkman) re-iterates the need to acknowledge the existence of stress and a need for a consequential (problem solving) reaction. This part in his model

is in tandem with primary appraisal in Folkman and Lazarus' model. Whilst the Coping process with respect to cognitive actions is equivalent to secondary appraisal.

Thus Cox (1987) proposes the most effective way to study the Coping process is by a rational problem solving perspective. He suggests a six point problem solving process, which is in tandem with the transactional stress model. It is also based upon individual cognitive behaviour. The six parts of the process are: the recognition that a problem exists, diagnosis of the problem via an analysis of the situation, creative generation of possible solutions, choice of the optimum solution, implementation of a solution and finally, monitoring, feedback and learning from the outcome.

Cox (1987) advocates that this problem solving Coping approach can be applied to study organisational stress and Coping in three ways. Firstly, in a practical way, by viewing occurrence of stress as failed problem solving, resulting Coping reactions and interventions as problem solving exercises. Secondly, in an applied way, by offering problem solving courses/exercises as intervention techniques (possibly as part of a stress counselling package). Finally, the problem solving approach can add practical value to any organisation by identifying areas of training needs for employees and counselling requirements (Cox, 1987). He further suggests that this model could possibly enhance the simple classification system of different Coping behaviours (generic and occupational specific) which many Coping investigations used previously (Miller et al., 1989; Ray et al., 1993).

This approach to understanding Coping has had some support. For example, researchers such as Cox and Ferguson (1991) have problem solving as one of three main functions of Coping, in their working model of Coping. Other researchers such as Griffiths et al. (1995) looking at the legal requirements of the degree of assistance offered by organisations, also named problem solving approach as a Coping component. Thus, they have all indicated that rational problem solving has been used effectively in workplace Coping interventions.

Furthermore many Coping measures also have an element of problem solving in their assessment of Coping, for example, Ways of Coping Checklist (WCCL; Folkman and Lazarus, 1985); COPE Scale (Carver et al. 1989); Coping Checklist (CCL; Dewe and Guest, 1990) and Cybernetics Coping Checklist (Edwards and Baglioni, 1993).



### 3.5 MEASUREMENT OF COPING:

According to Dewe et al. (1993), the most common method for researching Coping in a work setting is taxonomic (Cox, 1987), where researchers describe and categorise Coping behaviours that are broadly applicable to all work situations. In their review of Coping literature (Dewe, Cox and Ferguson, 1993), they found only five studies (Burke, 1971; Dewe and Guest, 1990; Latack, 1986; Pearlin and Schooler, 1978; Stone and Neale, 1984) that addressed the development of Coping measures. With respect to defining Coping, most studies used the definition of Coping put forward by Folkman (1984) or Folkman and Lazarus (1984), while others suggested; let the research 'speak for itself'. In such studies, Coping was defined through the questions used or by the methodology used to classify the strategies. However, Dewe et al. (1993) were able to divide Coping research into two broad categories; those that were empirical and those that were theoretically driven. Empirical studies (for example, Dewe and Guest, 1990; Pearlin and Schooler, 1978; Ferguson, 1992) used open ended questions and then used content or factor analysis to derive a model which may then be applied to understand the original questionnaire data. Theoretically driven studies let existing theory guide the development of their models and scales (for example, Dewe, 1989). The more adequate of these studies offer a methodological and detailed analysis of the available literature and a well argued rationale for item selection and subsequent developments (Latack, 1986).

A more recent perspective that criticises the area of measurement of work stress and Coping is that put forward by Briner, Harris and Daniels (2004). They propose that a fundamental reappraisal of work stress and Coping theory is needed. They indicate that the traditional approach is too narrow, simplistic and fails to reflect the complexity of human behaviour. They indicate that researchers have been slow to develop methods to address these issues and what is now needed is a more fundamental redevelopment of theory and measures used. Additionally, they argue that an individual (employee) should be seen as a job crafter; thus a person who crafts their job to help make sense of negative work events (according to these authors, this view is related to the idea that job characteristics are separate from the individuals who perform them). Therefore, to a great extent the job is shaped (crafted) by the employee, and that the traditional approach to work stress and Coping research does not take account of an individuals pro-activity and agency in crafting the characteristics of their jobs (Briner et al., 2004).



### **3.5.1 OVERVIEW AND CRITIQUE OF COPING MEASURES**

There are an abundance of scales to measure Coping (for example, Aldwin, Folkman, Schaefer, Coyne & Lazarus, 1980; Carver, Scheier, & Weintraub, 1989; Dewe and Guest, 1990; Ferguson and Cox, 1997; Edwards and Baglioni, 1993; ). However most of the scales differ in their conceptualization of Coping, thus choosing between them is often difficult and problematic (Steed, 1998). For example researchers such as Cook and Heppner (1997) reviewed three Coping measures; The COPE scale (Carver et al., 1989), the Coping Inventory for Stressful Situations (CISS; Endler and Parker, 1994), and the Coping Strategies Inventory (CSI; Tobin, Holroyd, Reynolds & Wigal, 1989). They found three different factor structures, again indicating little consensus in conceptualisation between the various Coping measures. Other problems associated with Coping scales include inadequate psychometric properties. For example, Folkman et al. (1986) examined the revised scale of the Ways of Coping Checklist (WCCL) consisting of 67 items and possibly the most widely used measure of Coping (Guppy et al. (2004). They found, using exploratory factor analysis, instead of the eight factor solution requested, a three factor solution with unacceptable Cronbach's alpha reliabilities. Thus re-iterating the various problems associated with the different measures.

However, in a major review of organisational stress theories, Edwards (1992) identified five major inconsistencies. He stated the theories were not consistent in their inclusion and focus on preferences and abilities; ill health symptoms and the relationship between stress and well-being; theories varied in their focus on Coping towards the environment or the person and the adoption of feedback links. To overcome these inconsistencies he proposed the Cybernetics theory of stress.

### **3.5.2 THE CYBERNETIC THEORY OF STRESS, COPING AND WELL-BEING (EDWARDS, 1992) AND THE CYBERNETICS COPING SCALE (CCS; EDWARDS AND BAGLIONI, 1993)**

According to Edwards (1992, 1998), stress involves the comparison of perceptions and desires, it includes both well-being and Coping as outcomes of stress, it suggests that stress could activate Coping directly, it indicates Coping could affect both the environment and the person and it includes a hierarchy of multiple feedback loops. Thus according to this



model, stress is a result from a discrepancy between an individual's perceived state and desired state. He suggests there are five Coping pathways (behaviours) and they work in the following ways. **Change the situation** through cognitive reconstruction or reinterpretation of information, **Accommodation** by altering personal characteristics, **Devaluation** by devaluing the importance of discrepancies between desires and perceptions, **Avoidance** by diverting attention away from discrepancies thus reducing their impact on well-being, and **Symptom Reduction** by acting directly on well-being to reduce symptoms. It is these dimensions that are measured by the CCS.

The CCS was initially developed using items from other existing Coping scales (Aldwin et al., 1980; Billings and Moos, 1984; Latack, 1986; Pearlin & Schooler, 1978; Sidle, Moos Adams & Cady, 1969). But the structure is derived directly from the Cybernetics theory of stress, and thus the scales were modified to measure the five dimensions of the Cybernetic theory (Guppy et al., 2004). Edwards and Baglioni (1993) initially put forward a 40 –item version (with eight items for each scale) of the CCS. However after further confirmatory factor analysis (due to weak item loadings and item redundancy of the Accommodation and Devaluation scales) they reduced the scale to a 20 item version by excluding four of the weakest items from each scale. According to Edwards and Baglioni (1993) the 20 item version lost little information over the 40 item version and thus they recommended the 20 item version. A further study by Edwards and Baglioni (1999), using a larger sample of (N=181) than the original study (N=116), reconfirmed that the 20 item version was preferable as it had higher reliability values and had a better fit.

Furthermore, a comparison between the factor structure of the well established and possibly one of the most widely used scales, the WCCL, (Folkman et al., 1986), and the CCS ( Edwards & Baglioni, 1993) indicated that the CCS had greater factor consistency (Guppy et al., 2004). According to Guppy et al. (2004), although it is not without problems, it is an improvement over the other measures of Coping that are available. Thus, for the current research a 15 item version of the CCS has been employed.

### **3.5.3 RATIONALE FOR USING THE 15 ITEM VERSION OF THE CCS**

An in depth analysis of the 20 item version was performed by Guppy et al. (2004) across four samples of data taken from four PhD theses. Sample One: 784 university students

(Sale et al., 2001); sample two: 508 uniformed police officers in the UK (Peters-Bean, 1999); sample three: 500 police officer recruits in the UK (Brough, 1998a); and sample four: 216 experienced social service employees in the UK (Short, 2000).

Guppy et al. (2004) found accommodation and symptom reduction scales produced weaker internal reliabilities and item loadings across all the four studies. Therefore these authors put forward a modified 15 item scale, by retaining the three items with the strongest item loadings for each factor. The deleted items did not result in any conceptual problems to the identification of the underlying dimension of the CCS (Guppy et al., 2004). They also report that alpha reliabilities for the 15 item version of the CCS are similar to the 20 item version, and ranged from acceptable to high for both scales. Furthermore, they found the 15 item version fits the data best compared to the 20 item version used across the four studies as well as both the Edwards and Baglioni (1993) 20- and 40- item versions.

In conclusion, this 15 item version of the CCS included within the current research has the advantage of being cross validated across four independent studies. Furthermore, two of these in Occupational Groups (two of which are in Police service samples) that are emergency service populations like the Fire Service, that is the Brough (1998a) and Peters-Bean (1999) studies. In support of this view, the 15 item version is a shorter measure with good psychometric properties that has acceptable to high cronbach alpha reliability scores.

### **3.6 EMERGENCY SERVICE AND FIRE SERVICE SPECIFIC COPING RESEARCH**

There is relatively little Fire service specific Coping research compared to other emergency services, especially within the UK Fire service.

Some studies that are of relevance from the Police service, are those by Hart et al. (1995) and Brough (1998, 2004).

As mentioned chapter one, Hart et al.'s (1995) study of 527 Police officers combined data from two related studies and addressed personal and work related factors that had an impact on psychological well-being. Hart et al. (1995) found that emotion focused Coping was associated with negative work experiences and problem focused Coping was



associated with positive work experiences. The study suggests with respect to Coping, emotion focused Coping is maladaptive and problem focused Coping is adaptive. Furthermore, when police officers attempt to cope with stressful work experiences by managing or dealing with their emotional response, the likely result is an increase in work Hassles. When, however police officers attempt to cope by managing or dealing directly with the stressful event, they are more likely to experience work Uplifts. That is, Hart et al. suggest their results indicate police officers use both strategies to varying degrees so there is no preference for use of one strategy over another.

Brough's (1998) study of 552 newly qualified UK Police officers addressed expectations and subsequent actual police work-based daily Hassles as compared with traumatic critical incidents. This research found, as in the Hart et al. (1993,1995) studies, that organisational aspects of the officers' work ('working with incompetent colleagues, paperwork, red tape Hassles and a lack of say in decision making') were more significantly related with poor mental well-being than operational aspects of work. Respondents indicated using positive and adaptive Coping methods (such as seeking advice and trying to change the situation). It could be said that this is akin to the Problem focused Coping method ('Change the situation') with respect to the Lazarus and Folkman (1982) scale.

Regehr et al. (2003) addressed social support, self-efficacy and trauma in 65 newly recruited and 58 experienced fire fighters. In this study, low levels of social support were associated with high levels of traumatic stress and depression. The Authors suggested that the nature of the job, with respect to the shift work, may have made it difficult to develop strong social support circles outside of work. This method of Coping could be likened to emotion focused Coping (Lazarus et al., 1986; Lazarus and Folkman,1984), whereby one tries to regulate ones emotions ( a method of doing this is by 'seeking social support').

A study looking at the role of social support and psychological well-being is that by Cowman et al. (2004), who studied 221 New York Fire fighters before the 9/11 incident. This research found perceived social support partially mediated the relationship between psychological sense of community and care giver satisfaction; and fully mediated the relationship between psychological sense of community and care giver stress. That is, in times of stress, fire fighters rely on support resources, other than those at work (for example sense of community) to help combat the negative effects of stress. The fact that



social support is used to negate the effects of stress suggests this could be a form of Coping.

A study by Monnier, Cameron, Hobfall and Gribble (2000) looked at the relationship between antisocial and pro-social Coping behaviours, and individual and relationship well-being (prospectively) in a sample of Fire Emergency Workers (FEWs) and their marital or romantic partners. The results indicated FEWs' antisocial Coping was related to higher levels of depressive symptoms. Pro-social Coping was related to decreased anger expression and increased relationship adjustment. Partners' pro-social behaviour was a significant predictor of FEW's reports of better adjustment. Results suggest for the FEWs that Coping has direct and cross over effects, and that pro social and anti social behaviour have differential effects on well-being.

In research within the UK, Baker and Williams' (2001) study of 78 fire-fighters had 39 from senior officer grade and 39 from 'watch member' grade (that is fire-fighters, leading fire-fighters and sub officers). This study took a problem solving approach, and according to D'Zurilla (1990) and Nezu et al. (1989, 1999), the problem solving model suggests that stress is a function of continual and reciprocal interactions between major life events, daily problems and problem solving Coping, the outcome of which may be a reduction in psychological and physical well-being. The authors found that despite differences in ranks, fire personnel reported similar levels of organizational stress, self appraised problem solving and psychological distress. Overall, studies utilizing this approach suggest that problem solving ability has both a direct and indirect influence (via stress) on the levels of well-being.

Research by Brown et al. (2002) in 248 Fire fighters in Northern Ireland found, overall, that 'greater psychological distress was associated with greater frequency of incident related negative emotions, external locus of control, less task- and emotion focused Coping and greater avoidance Coping'. Other findings were that low levels of trauma exposure were associated with greater emotion focused Coping resulting in less psychological distress and higher levels of trauma exposure with greater task-focused Coping and lower psychological distress. This research also indicated that avoidance Coping (not emotion or task-focused Coping) mediated the relationship between locus of control and psychological distress. That is, externals tended to use more avoidance Coping thus resulting in greater psychological distress.



### **3.7 SUMMARY**

These studies provide some evidence to support that a problem solving approach to Coping is a method that some emergency service personnel may use to cope with stress.

Additionally, there is some evidence for the distinction between Direct (Problem focused) and Indirect (Emotion focused) Coping methods, and that, depending which method(s) is used, this has an influence on how effective or not the Coping may be. That is research suggests that emotion focussed Coping is not as effective as problem focussed Coping (Hart et al.,1995)

The current research uses the 15 item version of the CCS (Guppy et al., 2004). As far as the author is aware to date this 15 item measure has not been used with a Fire service sample and within the UK. It is hoped that the current research will add to the knowledge base in explaining and understanding the impact of Coping characteristics of Fire service personnel.

# **4**

## **CHAPTER FOUR**

### **THE RESEARCH FRAMEWORK**

#### **4.1 OVERVIEW OF CHAPTER FOUR**

The previous three chapters addressed the areas of Stress and strain, Individual differences and Coping respectively. Within each chapter, the relevance of each of these components to stress and psychological well-being was discussed and finally literature addressing research specific to the Fire Service was reviewed.

Chapter Four draws together the limitations of the existing research and describes the rationale for the current research. A model of stress is proposed based upon the reviewed literature. The qualitative and quantitative research conducted in this thesis is described and the broad aims of this thesis, as well as aims specific to the qualitative and quantitative research are described.

#### **4.2 CURRENT RESEARCH**

The current research was divided into three phases; phase 1 and 2 was quantitative research and phase 3 was qualitative research. Each has different methodologies and aims, which will be described later. However, the overall research objective of all phases was to examine the 'Impact of Occupational Stress on Psychological Well-being in The Fire Service'.

The quantitative research employed a questionnaire to examine the different components of the proposed model of stress. The sections to follow describe this proposed model. The qualitative research was conducted to expand upon and gain a more in depth understanding



of the findings of the quantitative phase of the research and to get a Fire service personnel's perspective on support and interventions that are available, as well as suggestions for improvements. In order to do this eleven questions were asked during semi structured interviews with six participants. The interview questions were partly based on findings of the quantitative phase of the research as well as some intervention related questions. The intervention related questions were included as the quantitative study focused more on causes of strain. Thus this part of the study was a follow up; addressing potential interventions and solutions to these causes of strain.

### **4.3 THE QUANTITATIVE RESEARCH**

The proposed model of stress is based on the Cooper (1986) and Williams and Cooper (1998) models of stress. It also takes heed of other research in the area with respect to individual differences and Coping. Some previous models have failed to acknowledge the influence of both of these in the stress and Coping process. For example, the original Cooper (1986) model included important concepts: sources of stress, individual differences and outcome diseases, but took no specific account of the Coping process. However, since then, this model has been expanded upon and adapted by many researchers (for example Williams and Cooper, 1998; Hart et al. 1993; 1995) and Coping was added after the development of the Pressure Management Indicator (PMI). Other earlier research by Lazarus (1966), suggested a simplified stress model which incorporated both the Coping response and feedback pathways. Unfortunately, this model made no attempt to include individual differences. Similarly, the stress model proposed by Cox and Mackay (1976), accounted for the importance of perception in the individual appraisal of stress and included a pathway leading to Coping reactions (cognitive and behavioural defence), but it did not identify where the influence of individual differences explicitly occurred within the model.

#### **4.3.1 THE PROPOSED MODEL**

For the present research Cooper's model (1986) and Williams and Cooper's (1998) models (Figures 1.5 and 1.5.1 in Chapter one) have been adapted and used as the basis for research within the Fire Service. The Cooper models are extensive models that take account of many factors that influence the stress process. They attempt to identify the sources of

stress, moderating factors, such as individual differences and Coping methods, and the resulting outcomes, both at an individual (e.g. psychological well-being) and organisational level (e.g. Work Performance).

More specifically, the proposed model in the present research includes the stressors (Uplifts and Hassles) as input, individual differences in the middle as moderators/mediators (Neuroticism (i.e. negative affect), Extraversion (i.e. positive affect), Mastery (control) and Coping), and several outcome measures; Job Satisfaction, Aspiration and Competence (which are measures of work well-being), General mental health (a measure of context-free well-being) and Work Performance.

Daily Hassles (as a measure of stress/pressure), Neuroticism (Negative affectivity) and Control were in Cooper (1986) Williams and Cooper, (1998) models, but Daily Uplifts (as a measure of positive aspects), Extraversion (Positive Affectivity), and Coping( Direct and Indirect coping) have also been added based on the work of Parkes, (1990). Cooper's (1986) original model did not have Coping but he added Coping to his original model later, after the development of the PMI as mentioned previously.



# THE PROPOSED MODEL OF STRESS

NB: Work Well Being- incorporates the outcome measure- Job Satisfaction, Competence and Aspiration  
Coping is divided into Direct (Problem Focused) Coping (Changing the Situation, Accommodation and Symptom Reduction) and Indirect (Emotion Focused) Coping (Devaluation, and Avoidance)

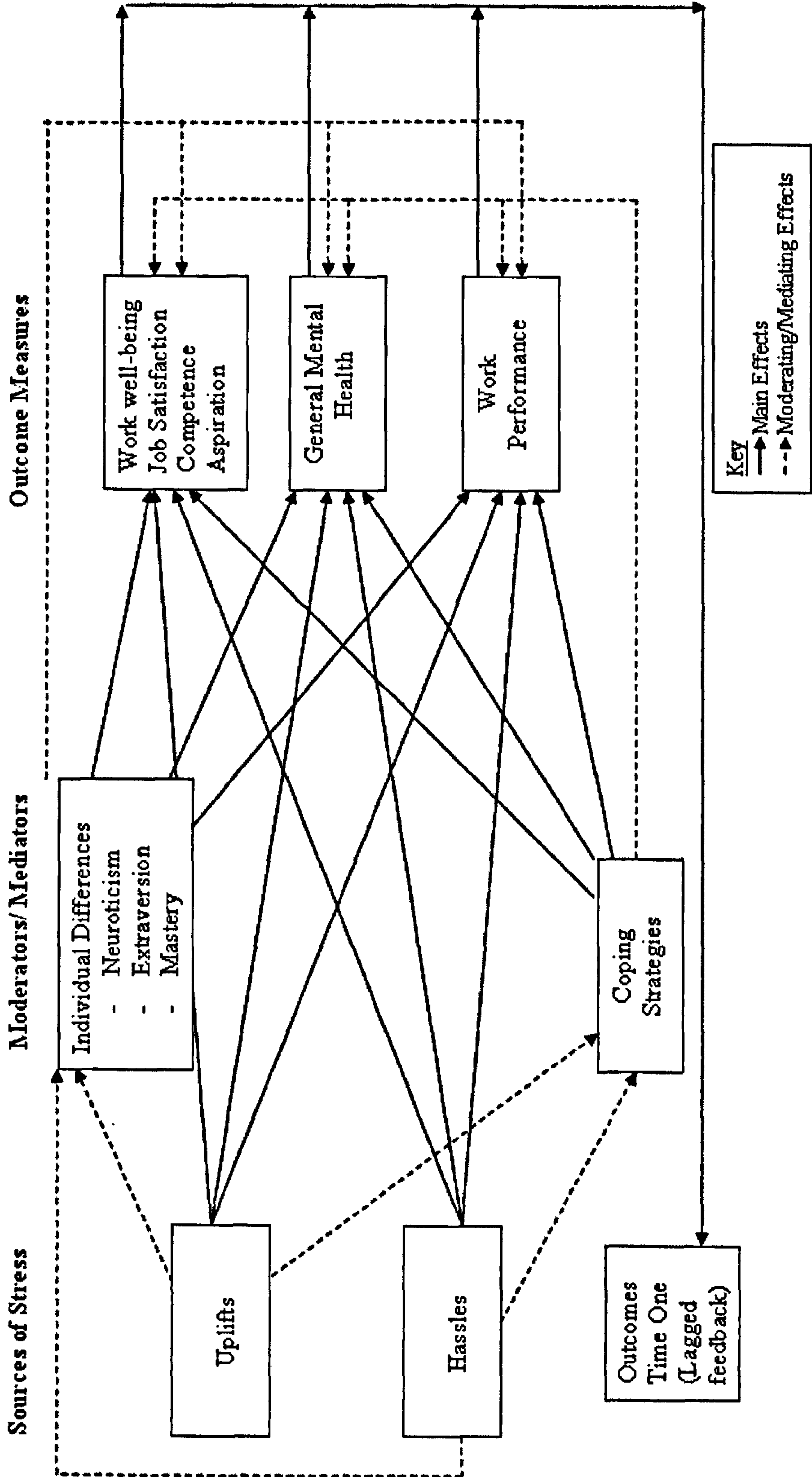


Figure 4.3.1 The Proposed model of stress

**Main effect** refers to when two variables, for example A and B are directly and simultaneously related to C, each contributing independently to the explained variance. In the present research, the main effect of the moderator/mediator variables on the outcome measures is independent of sources of stress. For example, if the predictor =stress, moderator/ mediator = anxiety, and outcome =Work Performance.

**A Moderator effect** refers to the interactive effect, that implies the magnitude and/or direction of the effect of A on C depends on the level of B. That is, a moderator variable impacts on/effects the relationship between a predictor and an outcome. For example, there may only be a relationship between high stress and reduced job performance for people with high levels of anxiety but not for people with low levels of anxiety.

**A Mediator effect** refers to a variable that is involved in a causal pathway between a predictor and an outcome. For example, it may be possible that high stress leads to high anxiety and it is this that then leads to reduced Work Performance.

#### **4.3.2 RATIONALE FOR APPLYING THE MODEL IN THE FIRE SERVICE**

The Present author's literature search has indicated that of the three emergency services, the Fire service has the least published research studies in the UK. For the Fire services in the UK the turning point with regards to claims for psychological damage resulting from attending 999 calls came as a result of the Kings Cross disaster in 1988. This resulted in a fire-fighter successfully claiming for damages for suffering from Post Traumatic Stress Disorders (PTSD) as a result of attending the Kings Cross incident. Since this, PTSD has been recognised formally as a health and safety issue and the Fire services now acknowledge the importance of stress and its impact on individuals. Thus since majority of the past research studies in the area of stress have been in PTSD, and Critical Incident Stress Debriefing (CISD). The current research aims to look at the impact of daily Uplifts (positive work experiences) and daily Hassles (negative work experiences) on an individuals' experience of stress.



### 4.3.3 RATIONALE FOR THE MEASURE OF STRESS

As discussed in Chapter 1, the majority of the research with regards to stress in the Fire service (throughout the world) has addressed psychological aspects of PTSD and Critical Incident Stress Debriefing (CISD). However Stress can be studied not only by addressing significant traumatic personal life events but also by examining daily stressors (Hassles). Research has generally tended to favour investigating stress through analysing significant life events and their effect upon the individual (Kanner et al., 1981; Alexander, 1990, 1991; Pillow et al., 1996). However the advantage of studying stress with respect to daily Hassles is that it gives a more accurate 'picture' of an individual's level of well-being (De Longis, Folkman and Lazarus, 1988; McCrae, 1990; Lavalley and Campbelle, 1995). Furthermore, the daily Hassles approach is thought to be more 'process centred', that is, frequent, repeated measures of subjective stress and well-being will give a greater understanding of the general stress process (Folkman et al., 1986; Lazarus, 1990; Watson 1990). Finally, examination of daily Hassles changes the focus from changes within the individual's life experiences to the occurrences of daily demands, resources, and constraints that are working within the overall person-environment relationship. The basis for this investigation stems from work by Hart et al. (1995) and later Brough's (1998) work with the Police service. To measure sources of stress specific to the Fire services, a **Fire specific Daily Uplifts and Hassles** scale was devised based on the Brough (1998) and Hart et al. (1995) scales. Their original scales examined the positive and negative aspects of work that affected an individual's well-being on a daily basis. The rationale behind using this scale for the present study is that it has already been used within emergency service populations by Hart et al. (1995) and Brough (1998). However, the present research is the first to use it within fire service personnel in England as far as the author is aware. Thus, the present research focuses on Daily Hassles and Daily Uplifts and their effect on psychological well-being.

### 4.3.4 RATIONALE FOR THE MODERATING/MEDIATING FACTORS:

As discussed in Chapters 2 and 3, according to the Cooper model of stress (1986) Williams and Cooper, (1998), various forms of stressors impinge upon an individual. The outcome of an individual's reaction to the stressors is dependent upon various factors. Research

suggests that individual differences have been found to be important either as mediators or as moderators in the work stress process, (for example, personality characteristics (Kobasa, 1982; Parasuraman and Cleek, 1984); work expectations . The inclusion of such measures within well-being investigations has been found to provide a more accurate representation of the experience of stress and ill-health. This has also been acknowledged by previous research (see for example, Weiss and Adler, 1984; Brief et al., 1988). Thus individual differences included within the proposed model of stress are Neuroticism (Negative Affectivity), Extraversion (Positive Affectivity) and Mastery (Control). Similarly Coping has also been included as a moderating/mediating influence in the stress process. In the proposed model, in line with Lazarus (1966), Coping has been divided into two components. Direct coping relating to problem focussed Coping and Indirect coping relating to emotion focussed Coping.

#### **4.3.5 RATIONALE FOR THE OUTCOME MEASURES**

In the current model measures of both individual level and organizational level outcomes (e.g. Work Performance) were examined as suggested by Cooper (1986).

In addition, the proposed model has incorporated as outcome measures, both an assessment of work well-being (i.e. job related well-being as measured by Job Satisfaction, Aspiration and Competence) and context free well-being (i.e. General mental health). This was based on the previous work stress models of Cooper (1986) and Warr (1987) that made a distinction between work and non work domains and the influence each has on the health and well-being of an individual. Previous research (Warr, 1990; 1994) has indicated both job related and context free well-being can be distinguished and measured independently. Additionally, according to Warr (1990, 1994), job related well-being is unstable, situation specific and is an individual state characteristic. On the other hand, context free well-being is thought to be stable, a trait characteristic and showing change only in circumstances of prolonged distress. In the current research, context free well-being is measured using the General Health Questionnaire (Goldberg, 1972). This measure, according to Banks et al. (1980), uses threshold scores, thus giving it clinical objectivity. Work well-being is assessed using a measure of Job Satisfaction (Warr et al., 1979), and measures of work Aspiration and work Competence (Warr, 1987). Additionally a measure of Work Performance (Guppy and Marsden, 1997) has also been included to get an overview of a



possible organizational level outcome. It is hoped that including these measures in the current research will enable to distinguish between job related and general individual well-being and to assess the influence of moderating/mediating factors on these two domains as suggested by many stress models.

Although the model proposed in the present research illustrates a fairly simplified linear process, the author acknowledges that there is likely to be a feedback process occurring between the stressors, individual differences and the outcome measures, thus likening it to the process of cognitive re-appraisal as suggested by Lazarus (1966). Research in the area, for example, suggests that individual difference variables could exert an influence upon the perception of stress (Brown and Harris, 1978; Cohen and Wills, 1985; Nelson and Quick, 1985), upon the appraisal of the stressor (McCrae, 1990; Cox and Ferguson, 1991; Parkes and Von Rabenau, 1993), upon the specific Coping behaviours adopted (Bandura, 1977; Lazarus and Folkman, 1987; Vingerhoets and Heck, 1990; Jenkins, 1991) and, upon the overall outcome measures (Gove, 1972; House, 1981; Sorensen et al., 1986; Moyle, 1997). Thus, the author recognises that the stress and Coping process is likely to be transactional and thus, far more complicated than the diagram suggests (please see figure 4.3.1). In addition, although within the model there are no arrows between the individual difference variables and the Coping process, it is accepted by the author that such influences may exist. For example, it is possible that effectiveness of Coping may be dependent on the influence of a particular individual difference. That is, an individual may adopt an ineffective Coping method such as denial or avoidance or devaluation due to the predominance of a negative disposition (negative affectivity) and thus reinforce beliefs about their own in Competence. Similarly, using an effective Coping method such as accommodation may be a reflection of and could be explained by an individuals' positive disposition (positive affectivity). However, it would not be possible to examine all relationships and pathways within the scope of this research. Within the current research the possible existence of these pathways are acknowledged but have not been incorporated into the model. However the possible moderating/mediating pathways between the stressors and outcomes will be examined.

#### **4.3.6 RATIONALE FOR USING A LONGITUDINAL DESIGN**

As cross sectional research designs do not allow for indicating causality between the variables and well-being constructs and any findings can only be regarded as tentative. To overcome this and to imply causality and obtain more conclusive results it is essential to do longitudinal research (Brough, 1995). This view has been recommended by many other researchers, who also emphasise the rewards of being able to assess causality, (for example: Zapf et al., 1996; Hart et al., 1995; Arnold, 1994; Parkes et al., 1994). Other advantages are that longitudinal research designs allow one to use various statistical techniques to test the predicted causal relationships between variables, such as hierarchical multiple regression and path analysis (please refer to Zapf et al., 1996 ).

The majority of research in the area of occupational stress has been cross-sectional in design, thus causal effects cannot be inferred and the effects of a third variable may be present (Zapf et al., 1996). Also, according to Zapf et al. (1996), longitudinal research designs are able to overcome methodological problems associated with cross sectional research designs. These include reversed effects, identification of effects of third variables and occasion factors (this allows to test whether a certain causal model will hold despite the influence of a third variable).

Thus, the current research is a repeated measures longitudinal design. This design enables the same primary variables to be measured over a particular time interval and therefore relationships between the variables to mature over time. Additionally, a longitudinal research design has distinct advantages, as it is able to provide greater support for causality between research variables as compared with cross sectional design studies (Lazarus and De longis, 1983). Such designs overcome methodological problems associated with cross sectional designs such as identification of third variables (Zapf et al., 1996), and also allow for the use of various statistical techniques to test the predicted causal relationships between the variables (please refer to Zapf et al., 1996), for example, Hierarchical Multiple Regression and Path Analysis. Finally, longitudinal research designs have been recommended by several authors (for example, Daniels and Guppy, 1994; Hart et al., 1995; Zapf et al., 1996).



Taking these factors into consideration justifies why it is of value to use a repeated measures longitudinal research design for the current research. Furthermore, the present author's literature search has not identified a study carried out on a longitudinal basis addressing the impact of Occupational Stress on Psychological well-being in the Fire Services in the UK. In addition, there has been no research conducted on a longitudinal basis adapting Cooper's (1986) and Williams and Cooper's (1998) Occupational Stress Models to the Fire Service. The present research aims to do this and thus resulting in this research contributing to knowledge in this area.

#### **4.3.7 ANALYSIS OF THE QUANTITATIVE RESEARCH**

The current research employs Pearsons Product Moment Correlation Coefficients to assess the linear relationships between various predictor variables and outcome measures. This is in line with Warr (1994), who used product moment correlations to assess the linear relationships between specific job characteristics and employee well-being. In the current research, Hierarchical multiple linear regression is used for assessing the degree to which the proposed model accounts for variance within the outcome measures. This is similar to Parkes' (1994) analysis of the mitigating effects of social support upon work related stress, where the independent variables were entered in a pre determined order, so as to control for any potentially confounding effects which may influence the outcome measures. Other researchers have also used multiple regression to explore various components of occupational well-being (for example, Moyle, 1995, Guppy and Rick, 1996; Zapf et al., 1996). Also Parkes (1990) used HMRA : to look at the extent to which variables at Time One (Demographics and Neuroticism) predicted GHQ scores at Time Two; to look at the extent to which Time Two measures (Work demand and Work support) added to the variance accounted for by Time One variables ( as main factors and interactions with NA); additionally, to look at the variance accounted for by Coping measures and the interaction between Direct coping and the work environment.

Hence the current research also uses Hierarchical Multiple linear Regression in a similar format to Parkes (1990;1994) to explore both job specific and context free psychological well-being. Within the current study, certain demographic (marital status and service years) and dispositional variables (Neuroticism, Extraversion, Mastery and Coping) have been identified through literature reviews as being likely to influence the effects of the

analysis. The variables mentioned above were entered in the different steps of the regression analysis in order to control for any possible influence (in the case of demographics) or to examine the possibility of moderation/mediation (in the case of dispositional variables). For each of the outcome variables (Job Satisfaction, Aspiration and Competence, General mental health and Work Performance measure) this procedure was followed.

In addition, Path Analysis was used to explore causal relationships between variables in the proposed model of stress. Path analysis enables multiple regression procedures to be utilised to calculate quantitative estimates of both direct and indirect causal connections between variables in a model. These estimates are calculated through path coefficients, which consist of the standardised regression beta coefficients or effect coefficients. These beta coefficients can be directly compared to examine which predictor variable has the greatest influence upon the outcome variable. Using these coefficients a Path diagram can be produced to illustrate the direct and indirect relationships between the variables (Bryman and Cramer, 1993; Tabachnick and Fidell, 1996).

#### **4.4 THE QUALITATIVE RESEARCH**

Qualitative research is included to expand and gain an in depth understanding of the quantitative findings and it also includes a focus on intervention. The purpose of including both types of research is not to question which approach is better, but to compliment and build on the findings of the quantitative research where quantitative methods may have their limitations. It is hoped the addition of the qualitative research will enable the researcher to profit from gaining a subjective insight into the reasons behind the quantitative findings.

The current qualitative research employed a semi structured interview consisting of eleven questions. The questions were derived partly from the findings of the quantitative analysis and some intervention related questions.



#### **4.4.1 METHODOLOGICAL RATIONALE FOR THE QUALITATIVE RESEARCH**

The Mixed Method procedure that was employed in the current research is called Sequential Explanatory Strategy. According to Creswell et al. (2003) this is the most straightforward mixed method strategy. It is characterised by collection and analysis of quantitative data followed by the collection and analysis of qualitative data. Priority is given to the quantitative data and the two methods are integrated during the interpretation phase. This method may or may not have a specific theoretical perspective. According to Creswell (2003) the purpose of the Sequential Explanatory Design typically is to use qualitative results to assist in explaining and interpreting the findings of a primarily quantitative study. The straightforward nature of the design is one of its main strengths. It can be used to explain unexpected results, it is easy to implement as the steps are divided into clear separate stages (quantitative and qualitative) and finally, this design feature makes it easy to describe and report (Creswell et al., 2003).

Research by Thogerson-Ntounami and Fox (2005) also has similarities to the current research in that it uses a mixed method procedure. The aim of this study was to address physical activity and mental well-being typologies in Corporate employees. The quantitative phase was Questionnaire based, using the internet to distribute and gather information on physical activity and indicators of global, work related and physical well-being. The qualitative phase entailed ten semi-structured interviews, from each of the five groups from the cluster analysis. This was to determine the degree of fit between the cluster description and the individual interview accounts and to provide a richer source of information regarding the underpinnings of the clusters. According to the authors, the results demonstrate the value and efficacy of using a multi-method approach to identify potential target populations for further study and targeted interventions. Further qualitative research relevant to the present research will be discussed in chapter 8.

#### **4.4.2 ANALYSIS FOR THE QUALITATIVE RESEARCH**

Thematic analysis is broadly a method for identifying, analysing and reporting patterns (themes), helping to organise the data in 'rich' detail (Boyatzis, 1998). However, it does not exist as a 'named' analysis like other methods, for example narrative analysis and

grounded theory (Braun and Clarke, 2006). Thematic Analysis is independent of theory and epistemology and can be applied across a range of theoretical and epistemological approaches. Due to the fact that Thematic analysis has theoretical freedom, it is flexible and provides a method for identifying, analyzing and reporting patterns (themes) within data. It also minimally organizes and describes data sets in (rich) detail (Braun and Clarke, 2006) and interprets various aspects of the research topic (Boyatzis, 1998).

Braun and Clarke (2006) stipulate that it is useful in summarizing key features of a large body of data and/or to offer a 'thick description' of the data set. It can highlight similarities and differences across a dataset, generate unanticipated insights, allow for social as well as psychological interpretation and can also be used for producing qualitative data suited for informing policy development.

Thematic analysis was considered an appropriate analysis for the present research because it focuses on what was said as opposed to how it was said, compared to other methods of analysis such as discourse analysis. This method allows the researcher to organise data into thematic sets as determined by the researcher. That is, it allows to gain a description and to capture the predominant or important themes that are reflected across the entire data set. Braun and Clarke (2006) indicate that, although in such analysis some depth and complexity is lost, a rich description is maintained and that this is an effective method when investigating an under researched area, or with participants whose views on the topic are not known, as in the present study.

## **4.5 DIFFICULTIES WITH DATA COLLECTION**

The original time scales proposed for the completion of the research changed significantly. Data collection (fieldwork) was originally due to start in November 2002 and finish by Nov 2004-Jan 2005. It entailed three phases; with the collection of two waves of data (quantitative), encompassing phases One and Two, and a qualitative phase Three, with a time lag of approximately six to seven months between each wave. However, due to the unexpected and unforeseen occurrence of the first national Fire Service strike in 25 years (November 2002), the original timescales had to be abandoned.



Carrying out research in such a climate meant leaving out sensitive Bio data such as 'age' 'sex' and 'ethnicity' for the first fire service sample (Sample One). This decision was taken by the Fire personnel in that Fire service, who also formed the focus group to adapt the questionnaire to make it bespoke to the Fire service. As Sample One was surveyed at the very beginning of the Fire strike, there was a great deal of uncertainty from Fire personnel about how independent the survey was, despite reassurances from the researcher and supervisors. Thus the focus group suggested that leaving out any information that may imply that individuals could be identified, would help encourage increased response rates. However, for the subsequent Samples (Samples Two to Five), the 'age' and 'sex' variables were included but not 'ethnicity'. 'Ethnicity' was omitted as there were very few non Caucasian Fire fighters generally in the service, so identification could have been possible.

Other problems such as Fire services 'dropping out' after the first wave delayed the research greatly. For example, Sample One, having agreed to do the second wave, after six to seven months, withdrew from the research due to the 'unrest' in the Fire service. Thus a further two Fire services were recruited (Samples Two and Three), but unfortunately they had very low response rates for the first wave of data collection, which meant that a second wave of data collection could not be justified with these two services. Hence another two Fire services (Samples Four and Five) were recruited. Additionally, within each of the Fire services, delays were caused as there were a lot of changes with regards the structure and management, this meant the researcher had to liaise with different managers at different phases of the research within a Fire service. However two waves of data were collected successfully with Samples Four and Five. Sample Five then also agreed to take part in the qualitative research phase. This, the final data collection phase was finally finished in March 2008.

However, the occurrence of the strike also meant that data was collected at a very interesting time for the fire service. A discussion of the background to the occurrence of the strike follows.

#### **4.5.1 BACKGROUND TO CONTEXTUALISE THE RESEARCH:**

The Fire Service is paid for by the public and is there to protect them from the threat of fire, accidents and other natural disasters (Bain report, Dec 2002). Underlying the first Fire

service strike in 25 years is a report put forward in December 2002; 'The Bain Report'. This report was the result of a three month review of the Fire service, which recommended how the Fire service should change in the future to meet the demands of the twenty first century. The 'Membership of the review' was put together with the co-operation of the Government, the employers' organisations and the fire authorities in England and Wales, Scotland and Northern Ireland, and the General Secretary of the TUC, thus said to be independent and objective. However, the Fire Brigades Union did not support the work of the Review, but this did not prevent the Review from carrying out what the Review 'body' put forward.

The evidence for the report was gathered through discussions with some brigades, fire staff, the employers, fire service associations and government bodies, as well as visits to nine Fire Brigades around the UK. According to The Bain Report, there was much room for reform within the Fire service. The report indicated that the 'Fire service needed to be changed from top to bottom and every aspect of its work reformed to bring it into line with best practice at the start of the twenty first century', as it had fallen behind best practice in the public and private sector. The report stated that too many people die as a result of fires in the United Kingdom, that the UK does not compare well with other countries, and that little progress had been made in recent years in driving down the threat of fire and other accidents. In order to overcome these issues The Bain Report proposed a list of recommendations for modernising the Fire service. The recommendations covered the following broad areas; Risk and community fire safety, The Role of central and local government, Implementation and management policy, Conditions of service (which included the four core areas-pay, total hours, overall ranks and basic leave), Retained fire fighters, and Implementing reform.

Framework Documents'. Of all the reforms put forward, Pay was a major factor for the strikes. The report indicated that as the Fire Service operated when the review was written, the pay was comparable to people doing other sorts of jobs with the same weighting in the public and private sector. However if the large-scale changes that were recommended by the review were implemented (where new career paths were opened up and new skills were displayed) then a pay rise would be justified. But, this would only happen when the total reform programme had been agreed and implementation was on track by November 2003, and verified at a local and national level by the independent audit process. Under these



terms the average pay would increase by 11% with an initial increase of 4% backdated to November 2002.

The Bain Report resulted in the pay dispute and thus the Fire Service strike. This led to the publication of the White Paper in June 2003, which was informed by the Bain report. The White Paper was backed by the Deputy Prime Minister at the time, John Prescott, and The First Secretary of State. The White Paper put forward a 'vision' for the future of the public sector Fire and Rescue service. It re-iterated the recommendations put forward in the Bain Report: That is, a public sector Fire and Rescue Service is proactive in preventing fires and other risks, rather than simply reacting to fires; acts in support of the Government's wider agenda of social inclusion, neighbourhood renewal and crime reduction; has effective institutions that support its role and purpose; is well managed and effective and; is committed to developing and adapting to changing circumstances, including the growing threat of terrorism. Thus, the White paper 'laid the foundations for the modern Fire and Rescue Service for the twenty first century'. These are the reforms the government had set out that the Fire service should implement to be in line with "best practice". That is, the White Paper set out the government's 'vision' for the Fire service.

As a result of the White paper, the Local and Communities Government (LCG) working with the Fire services put forward the 'National

The National Framework is a strategic plan outlining how the Fire and Rescue Service can deliver its' public service agreement targets and other objectives set out by the government at a more local level. There have been several National Framework Documents, the first of these was first published in 2004/2005.

The most recent one was published in May 2008, as described below.

The May 2008 National Framework document sets out what the government expects from the Fire and Rescue Services for the next three years.

"The Fire and Rescue National Framework sets out the Government's priorities and the objectives for the Fire and Rescue Service. It does this by making clear:

- the Government's expectations for the Fire and Rescue Service,
- what Fire and Rescue Authorities are expected to do; and

- the support the Government will provide in helping them to meet these objectives.

The Framework is a strategic plan, which outlines the outcomes the Government expects to see delivered by Fire and Rescue Authorities and Regional Management Boards across the range of their functions. It is not a national blueprint and does not provide detailed guidance on how to meet these objectives. Building on the publication of the joint vision for the Fire and Rescue Service by the LGA, CFA and Communities and Local Government last year, this Framework sets out the challenges and opportunities faced by the Service, its partners and government in support of the Service over the next three years.” (cf The Fire and Service Rescue National Framework; 2008, p 5).

In summary the Bain report lead to the publication of the White paper in June 2003. Based on this several National Framework documents have been published (the most recent one in May 2008), which outlined and re-iterated what has been stated in the White Paper. That is, what the Fire and Rescue Services need to achieve in order to meet standards of ‘best practice’. However, the National Framework document is not a ‘national blueprint’ but outlines what the Fire services need to achieve at a more local level. It underpins the restructuring and re-organisation of the Fire Services, (that was started in November 2003) and occurring throughout the UK.

#### **4.6 AIMS OF THE PRESENT RESEARCH**

Broadly, the aim of this research is to contribute to the understanding of Occupational stress in the Fire Service and to investigate The impact of Occupational Stress on Psychological well-being in the Fire Service.

In order to address these aims the research involved three phases. Phase one was quantitative cross-sectional research and involved administering a questionnaire to 5 fire services. Phase 2 involved quantitative longitudinal research with two of these 5 fire services, whereby the same questionnaire was administered at a second time point. Phase 3 involved the use of qualitative semi structured interviews with six participants from one fire service to address issues arising from Phase 1 and 2.



#### **4.6.1 THE AIMS OF THE QUANTITATIVE RESEARCH**

- To contribute to the study of occupational stress by adapting Cooper's (1986) and Williams and Cooper's (1998) model to the Fire service.
- To identify factors that affect individual and organisational outcomes (with respect to well-being) in the Fire service.
- To contribute to the understanding of occupational stress by researching the specific influence of individual differences and Coping on the relationship between stressors and psychological well-being in the fire service.

The Hypotheses to be examined are:

##### **HYP 1:**

**Hassles and Uplifts will have a direct effect on Outcome variables.**

##### **HYP 2:**

**Individual differences and Coping strategies will have a direct effect on Outcome measures. (For example: Parkes(1990) suggests there is a main effect for Neuroticism and Coping on GHQ).**

##### **HYP 3:**

**The relationship between Uplifts and Hassles and Outcome measures will be moderated by Individual differences and Coping strategies, (for example, Parkes (1990) suggests moderator effects for Neuroticism and Coping).**

##### **HYP 4:**

**Individual differences and Coping will have a mediating influence on the relationship between Hassles, Uplifts and Outcome measures.**

## **HYP 5:**

**Time One Outcome measures will have an influence on the prediction models at Time Two, (for example, Daniels and Guppy, 1997 suggest Time One Outcome measure influences Time Two Predictors).**

Hypotheses 1-4 will be investigated using both the cross-sectional data as well as with the longitudinal data. Hypothesis 5 will be tested only with the longitudinal data.

### **4.6.2 THE AIMS OF THE QUALITATIVE RESEARCH**

- to explore further and gain a more in depth understanding of the findings of the quantitative survey completed by one of the Fire Services that were part of the longitudinal study
- to get the perspective of Fire service personnel on support and interventions that are available within the service and their suggestions for improvements.

The next three chapters will describe the quantitative research: Chapter Five describes the Methodology of the quantitative research, Chapter Six describes the results of the cross-sectional data collection and Chapter seven describes the results of the longitudinal data collection. The Qualitative methodology and research findings are discussed in a separate Chapter Eight.



## **CHAPTER FIVE**

# **METHODOLOGY FOR THE QUANTITATIVE RESEARCH**

### **5.1 OVERVIEW OF CHAPTER**

This chapter describes the methodology for the quantitative part of the research. It outlines the target population, research design, description of the samples, details of the measures used in the questionnaire and the research procedure.

### **5.2 THE TARGET POPULATION**

The population used were Fire Service personnel in the UK. The rationale behind this was outlined in a previous chapter. To summarise, firstly they are a vital service whose psychological issues are under investigated in the UK. Much of the available research has been done outside the UK (Scott and Myers, 2005; Brough, 2004), and thus any research using UK samples would be invaluable. Secondly, there are relatively few investigations dealing specifically with the psychological well-being and support given to and needed by those in the service. Thirdly, few studies have used a longitudinal design where Fire fighters are surveyed at two time points. Throughout the research, the samples targeted were from management level to Fire fighters as well as non-uniformed support staff.

### **5.3 THE RESEARCH DESIGN**

The quantitative study was conducted in two parts; part one involved a cross-sectional questionnaire study of three samples. Part two involved a longitudinal repeated measures questionnaire study of two other samples, where data was collected at two time points.

### **5.3.1 PART ONE: CROSS SECTIONAL DESIGN**

A cross sectional design was adopted for three samples (samples 1-3). This was necessary due to the growing hostility and mistrust between the management and Fire fighters arising from the dispute that was occurring at the start of this research. All three samples initial intention was to participate in a longitudinal study. However Sample One withdrew after the first wave of data collection as the 'climate' in the Fire Service was tumultuous as it was in the middle of the Fire strike. Samples Two and Three had very low response rates that could not justify a second wave of data collection.

### **5.3.2 PART TWO: LONGITUDINAL DESIGN**

A longitudinal repeated measures design was adopted for two Fire Services (samples 4 and 5). This research design has been recommended and used by Zapf et al. (1996) and Hart et al. (1995). Each Fire service was surveyed at two time points approximately 6-8 months apart using the same questionnaire on each occasion.

### **5.3.3. RATIONALE FOR THE LONGITUDINAL RESEARCH DESIGN**

The longitudinal design enables the same variables to be measured over a time interval in order to look for changes in these variables. Longitudinal research designs, within occupational stress research, have been recommended by many authors (for example, Zapf et al., 1996; Hart et al., 1995; Arnold, 1994; Parkes et al., 1994; Lazarus, 1981; Gruen et al., 1988; Arnold, 1994; Parkes et al., 1994; Hart et al., 1995 ). They have a number of distinct advantages over cross sectional research designs. They provide a greater suggestion for causality between research variables as compared with cross sectional designs (Lazarus and DeLongis, 1983). That is, cross sectional designs are ill suited to test causal relationships because they cannot provide any evidence regarding the temporal order of the variables (De Lange et al., 2003). According to Cook and Campbell (1979) and Taris and Kompier ( 2003), although statistical techniques such as structural equation modelling (SEM) may provide an indication of causal direction, of particular pathways in cross sectional research, strong evidence of the causal order of variables requires a longitudinal design. That is cross sectional research designs do not allow for indicating causality between the variables and well-being constructs and any findings can only be



regarded as tentative. Thus, to overcome this and to imply causality and obtain more conclusive results it is essential to do longitudinal research (Brough, 1995). The longitudinal designs enable the use of statistical techniques to test the predicted causal relationships between variables. There are many techniques for analysing predicted causal relationships such as hierarchical multiple regression and path analysis (please refer to Zapf et al.,1996).

According to Zapf et al.(1996), longitudinal research designs are able to overcome methodological problems associated with cross sectional research designs. These include reversed effects, identification of effects of third variables and occasion factors (this allows to test whether a certain causal model will hold despite the influence of a third variable). For example, in occupational health research it is often assumed that job characteristics (e.g., demands and control) influence health. Besides the ‘standard’ causal relationships, longitudinal designs offer the possibility of examining the effects of Time 1 health on Time 2 job demands and control (reversed causal relationships) (Zapf, Dorman and Frese, 1996). According to De Lange et al. (2003), this also implies that cross sectional designs are ill suited for exploring reciprocal causal relationships, in which variable X (e.g., job characteristics) and Y (e.g., health) mutually influence each other. Such relationships should be controlled for, as they may provide alternative explanations for certain associations between variables.

## **5.4 BACKGROUND TO PATH ANALYSIS**

Zapf et al. (1996) investigated 43 longitudinal studies and found three main methods of statistical analysis; these were correlational research (e.g., the comparison of cross-lagged correlations), multiple regression and structural equation modelling (SEM). Comparison of cross-lagged correlations may yield erroneous conclusions according to Taris (2000). Furthermore Zapf et al. (1996) stated that it is difficult to demonstrate reversed or reciprocal relationships, as the cross-lagged correlations depend on the variances of the measured variables and the across time stability of the variables (Kessler and Greenberg,1981). Therefore, multiple regression analysis and SEM are preferred for analyzing cross-lagged effects (De Lange et al., 2003).

Thus, for the present research, Path Analysis, which is an extension of the multiple regression procedure (Brymen and Cranmer, 2004) was chosen as a method of analysis. It

can be used to explore causal relationships between variables. It uses the multiple regression procedure to provide quantitative estimates of both the direct and indirect causal connections between the variables in a model. These estimates are calculated through path coefficients, which consist of the standardized regression beta coefficients. The resulting figures or effect coefficients can be directly compared, in order to examine which predictor variable has the greatest influence upon the outcome variable. A direct effect occurs when a variable has an effect on another variable without a third variable intervening between them. An indirect effect occurs when there is a third intervening variable through which two variables are connected. However, Path Analysis cannot establish causality/ causal structure (that is, it cannot be used as a substitute for the researcher's views about the likely causal linkages among groups of variables). All it can do is to examine the pattern of relationships between three or more variables. Thus, it can show the relative impact of the variables upon each other but cannot validate that causal structure, since a cause must precede an effect. Hence, according to Brymen and Cranmer (2004), the aim of Path analysis is to provide quantitative estimates of the causal connections between sets of variables. The connections proceed in one direction and are viewed as making up distinct paths.

Furthermore, according to Garson (2006, 2008), Path analysis requires the assumptions of regression, that is, interval level data and low multi-collinearity. It is sensitive to model specification and failure to include relevant causal variables or inclusion of extraneous variables, which often substantially affect the path coefficients, i.e. the values that are used to assess the relative importance of various direct and indirect causal paths to the dependent variable.

Finally, using the beta coefficients (effect coefficients), path diagrams can be drawn, similar to the structured equations method, to illustrate the direct and indirect relationships between the variables (Bryman and Cramer, 1993; Tabachnick and Fidell, 1996).

#### **5.4.1 PATH ANALYSIS PROCEDURE**

For the current research a series of Path Analyses were conducted on the outcome measures of Job Satisfaction, Aspiration, Competence, General mental health and Work Performance for both the cross sectional and longitudinal datasets in order to answer hypothesis four and for the longitudinal dataset only in order to answer hypothesis five.



The Path analysis method used for the current research broadly followed Brymen and Cramer's (2004) procedure. However due to the fact that there were only four significant interaction effects (moderating effects) out of fifty in the Hierarchical Multiple Regression Analyses, no moderating effects were included and only the mediating effects were examined in Path Analysis.

For the purpose of the current research, the Path Analysis was conducted using SPSS and calculating a series of Multiple Regression Analyses. In SPSS, the regression weight in the output file refers to the standardized regression coefficients for each variable or beta weights/values. That is, a path coefficient is a standardized regression coefficient (beta) that shows the direct effect of an independent variable on a dependent variable in the path model (Garson, 2006, 2008).

For the cross sectional data, to calculate **the direct effect of the stressors (Uplifts and hassles) at Time One on the individual differences at Time One-** (Neuroticism, Extraversion, Mastery, Direct and Indirect Coping) the following was done: Firstly, to calculate the direct effect of Uplifts- each individual difference variable at Time One was entered as the dependent variable (DV) and Uplifts was entered as the independent variable (IV). To calculate the direct effect of Hassles at Time One, Hassles was then entered as the independent variable (IV) and each individual difference variable was entered as the DV.

To calculate **the direct effect of the individual difference variables and stressors at Time One on the outcome measures at Time One**, the following was done.

For each outcome measure, all the variables (Uplifts, Hassles, Neuroticism, Extraversion, Mastery, direct and Indirect Coping) were entered together as the IV, and each of the outcome measures (in turn) were entered as the DV. The regression weights (beta) are then used to draw the path diagrams (as illustrated by figures 7.1 to 7.5).

For the longitudinal dataset, to calculate **the direct effects of Time Two variables on Time Two outcomes**, each outcome at Time Two (in turn) was entered as the DV. With regards to the IV, at step one, the outcome measure at Time One was entered (in order to control for this), and at step two, all the other Time Two variables (sources of stress and individual difference variables at Time Two) were entered.

**To calculate the direct effect of stressors (Uplifts and hassles) at Time Two on individual difference variables at Time Two**, the same procedure as for the cross sectional data was followed, except using values of Uplifts and Hassles at Time Two and individual difference variables at Time Two. That is for Neuroticism, Extraversion, Mastery, Direct and Indirect Coping at Time Two the following was done. Firstly, to calculate the direct effect of Uplifts at Time Two, each individual difference variable at Time Two is entered as the dependent variable (DV) and Uplifts is entered as the independent variable (IV). To calculate the direct effect of Hassles at Time Two, each individual difference variable at Time Two is entered as the DV and Hassles was then entered as the independent variable (IV).

**To calculate the direct effect of Time One outcome on Time Two predictors (Uplifts and Hassles (stressors)).**

Time One outcome is entered as an IV and predictors at Time Two Uplifts and Hassles (in turn) are entered as the DV.

The beta values from these analyses are then used to draw the path diagrams (as illustrated by figures 7.6 to 7.10).

From the diagrams, the direct effects of each variable are evident but to calculate the indirect effects (paths), the significant coefficients for each path are multiplied. For the cross sectional sample, the results suggest a beta value of 0.08 and above was significant and for the longitudinal sample a beta value above 0.1 was significant (Garson, 2006, 2008).

The results of the path analysis for each of the five outcome variables for both the cross sectional and longitudinal data sets are illustrated. For each path model, only the significant paths (that is, beta (path coefficients) values above 0.08 for the cross sectional sample and above 0.1 for the longitudinal sample) are described.

The direct paths from the stressors to the individual differences are the same for each of the outcomes measures. For the cross sectional sample, they indicate significant negative direct effects from Uplifts and significant positive direct effects from Hassles to each of the



individual differences (Mastery, Extraversion, Neuroticism, Direct Coping and Indirect Coping).

They were calculated in order to calculate indirect paths, should they exist. Thus they are not reported for each of the outcome measures.

## **5.5 SAMPLES**

In all samples, all levels of staff in the Fire Services were targeted. All Fire Services constitute both 'Wholetime' and 'Retained' Fire stations. Wholetime Fire stations are those that are manned 24 hours a day by fire fighters working in different shifts. Retained Fire stations have only part-time fire fighters who are called when incidents occur.

### **5.5.1 PART ONE: Cross-sectional Samples**

Sample One: This Fire and Rescue Service had 1030 personnel. There were 24 Fire Stations, of which 14 were Wholetime Fire stations, 7 Retained Fire stations and 3 stations had both Wholetime and Retained staff. Two hundred and one participants responded to the survey. This was a response rate of 19.5 %.

Sample Two: The total population of the Fire service was approximately 800. There were 11 Whole time and 11 Retained fire stations. Forty six participants responded to the survey. This was a response rate of just under 6%.

Sample Three: The total population of the Fire service was approximately 850. There were 9 Wholetime and 6 Retained fire stations. One hundred and twenty participants responded to the survey. This was a response rate of 14%.

### **5.5.2 PART TWO: LONGITUDINAL SAMPLES**

Sample Four: The total population of the Fire service was approximately 980. There were 10 Wholetime and 12 Retained fire stations.

For the first phase three hundred and two participants responded. This was a response rate of almost 31%. For the second phase, one hundred and thirty nine participants responded.

This was a response rate of just over 14%. Sample Five: The total population of the fire service was approximately 850. this fire service had 38 fire stations of which 11 were Wholetime and 27 Retained.

For the first phase of data collection, one hundred and ninety eight participants responded. This was a response rate of just over 23%. For the second phase one hundred and thirty seven participants responded. This was a response rate of just over 16%.

## 5.6 THE QUESTIONNAIRE

This section describes the Questionnaire used in the present research.(Please refer to Appendix One)

The questionnaire used by Brough (1998) for her study on the Police Service was adapted for the current research. The present questionnaire consisted of 8 pre-published scales addressing psychological well-being. Of these, the Biographical Information section, Daily Uplifts and Hassles scale were made Organisational Specifics and thus were adapted to make them bespoke to the fire service (Please see Procedure section). The questionnaire was designed for self- completion.

### 5.6.1 BIOGRAPHICAL INFORMATION

The First part of the questionnaire requested **Biographical Information**, such as gender, age, category of staff, length of service, current domestic status, and number of dependent children, height and weight. (For Sample One, gender and age were omitted as the management of this Fire Service felt including these would greatly reduce response rates due to the 'uncertain climate' of Fire Service at the time).

For all the scales described below Cronbachs alpha values relate to the data for all five Samples (N= 867).



## 5.6.2 FIRE SERVICE SPECIFIC DAILY UPLIFTS AND HASSLES SCALES

To measure sources of stress specific to the Fire services, a **Fire specific Daily Uplifts and Hassles** scale was devised based on the Brough (1998) and Hart et al. (1995) scales. The original scales were specific to the Police service, examining the positive and negative aspects of work that affected an individual's well-being on a daily basis. (The original scale consisted of 86 items for the Police Daily Hassles scale and 50 items for the Police Daily Uplifts scale). The rationale behind the scale for the present study is the same as for the Brough (1998) study, except with regards to Fire personnel. Respondents were asked *'the extent to which you believe each item either 'made you feel good' (uplift scale) or 'has hassled or bothered you' (Hassles scale) during the past month of fire service work'*. They answered on a five point Likert scale where 0= *Definitely does not apply to me*, and 4= *Definitely applies to me*.

A high score denotes increased Uplifts or increased Hassles. The Cronbachs alpha for these scales overall were Uplifts 0.86 and Hassles 0.88 -Hart et al. (1993).

### 5.6.2.1 FIRE SERVICE SPECIFIC DAILY UPLIFTS SCALE

For the present research an 18 item *Fire Service specific Uplifts scale* was devised using the Brough (1998) scale and omitting items that were irrelevant to the Fire service. Focus groups from the Fire Service making up Sample One were used to do this. (Please see Sample One procedure section). The scale aimed to identify work related factors that had a positive effect on a person's well-being.

Examples of items from this scale are:

*Mobilising to an incident*

*Helping the public*

*Working hard*

For the present research the Cronbachs alpha for the overall Uplifts scale was 0.86.

### 5.6.2.2 FIRE SERVICE SPECIFIC DAILY HASSLES SCALE

For the present research a 20 item *Fire Service specific Hassles scale* was devised using the Brough (1998) scale and the Focus group from Sample One to omit items that were irrelevant to the Fire service.

### 5.6.3 COPING AT WORK

In order to measure Coping methods used by fire personnel, the **Cybernetics Coping Scale (CCS)** by Edwards & Baglioni (1993) was used. The respondents were asked '*how often do you use the following Coping technique for your life at work*'. A five point Likert scale was used to answer statements from the CCS scale. The respondents answered on a scale where: 1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often* and 5 = *Always*. A high score denotes increased use of a particular type of Coping.

The CCS measures five forms of Coping behaviour using 20 items. Edwards and Baglioni (1993) reported a high level of internal consistency for their 20 item scale with Cronbachs alpha values ranging from 0.78 to 0.95. However for the present research the 15 item version of the CCS was used as recommended by Guppy and Edwards (2003). Guppy and Edwards' (2003) Confirmatory Factor Analysis of this scale spans 4 studies with a total population of 2008 from varying samples; suggesting that there is stability for the measure in differing samples. The five forms of Coping are:

*Changing the situation* (item numbers 1, 7, 13).

An example of an item from the scale is, '*I try to change the situation to what I want*'.  
The Cronbachs alpha for the present research is 0.75.

*Accommodation* (item numbers 2, 8, and 14).

An example of a question from this scale is, '*I make an effort to change my situation*'.  
The Cronbachs alpha for the present research is 0.62.

*Devaluation* (item numbers 3, 9, 15).

An example of a question from this scale is, '*I tell myself that the problem is unimportant*'.  
The Cronbachs alpha for the present research is 0.81.



*Avoidance* (item numbers 4, 10, and 16).

An example of a question from this scale is, '*I try to turn my attention away from problem*'.

The Cronbachs alpha for the present research is 0.77.

*Symptom Reduction* (item numbers 5, 11, and 17).

An example of a question from this scale is, '*I try to let off steam*'.

The Cronbachs alpha for the present research is 0.77.

Using Principle Component Analysis and specifying a two factor solution.

the scale has been divided into Direct coping (Changing the situation, Accommodation, Symptom reduction) and Indirect coping (Devaluation and Avoidance).

The Cronbachs Alpha value for Direct coping is 0.73 and for Indirect coping is 0.84.

#### **5.6.4 NEUROTICISM AND EXTRAVERSION**

A person's affective disposition can be divided into **Negative Affectivity (NA)** and **Positive Affectivity (PA)**. Warr (1999) suggested these 'reflect pervasive individual differences in emotional style and feelings about one self.' The Eysenck Personality Inventory (Eysenck and Eysenck, 1964) Neuroticism and Extraversion scale is a 12 item scale. It has been used to measure Negative and Positive Affectivity respectively. However for the present research, as recommended by Sale et al. (2002) after their study, a 10 item scale (with 5 items each measuring Neuroticism and Extraversion respectively) was used (this was found to have a higher reliability than the 12 item scale). For both the Neuroticism and Extraversion scales, respondents answered on a four point Likert scale, how they usually behaved or felt, where: 1 = *Almost Never*, 2 = *Quite Seldom*, 3 = *Quite Often* and 4 = *Almost Always*.

##### **5.6.4.1 NEUROTICISM SCALE**

The **Neuroticism scale of the Eysenck Personality Inventory** (Eysenck and Eysenck, 1964) was used to measure Negative Affectivity (NA). However for the current study a 5

item version was used, (as used previously by Sale et al., 2002 and Daniels et al., 1997) According to Watson and Clark (1984), a person with a high NA personality trait would be more distressed and dissatisfied in response to any situation. Warr (1999) concluded such individuals focus on the negative side of themselves and the world in general. They scan the environment for trouble and experience anxiety about what they see.

Examples of questions from this scale are:

*Does your mood go up and down?'*

*Do you feel "just miserable" for no good reason?*

The Cronbachs alpha for the 5 item Neuroticism scale used by Sale et al. (2002) was 0.66 and Daniels et al. (1997) the Cronbachs alpha was 0.76. For the present research, Cronbachs alpha is 0.80. The higher the score, the more neurotic an individual is and their disposition tends towards Negative Affectivity.

#### **5.6.4.2 EXTRAVERSION SCALE**

The **Extraversion scale of the Eysenck Personality Inventory** (Eysenck and Eysenck, 1964) is used to measure Positive Affectivity (PA). Individuals who have high PA scores have been described by Warr (1990) as 'those with high levels of energy, excitement and enthusiasm'.

Examples of questions from this scale are:

*Do you like plenty of excitement and bustle around you?*

*Are you rather lively?*

The Cronbachs alpha for the 5 item Extraversion scale used by Sale et al. (2002) was 0.76. For the present research Cronbachs alpha is 0.82. The higher the score the more extravert an individual is and their disposition tends towards Positive Affectivity.



### 5.6.5 MASTERY SCALE

In order to measure Personal Control at Work, a short version of the 7 item *Mastery scale* (Pearlin and Schooler, 1978) was used. The 7 item scale had a Cronbachs alpha of 0.80 (Thoits, 1987). For the present study only three items were utilised. Further research (e.g. Guppy and Edwards, 2004), has shown the three items used for this study were the most reliable for measuring personal control. Edwards (2004) had internal consistencies for three different samples of 0.71, 0.86 and 0.75 using the 3 item scale. Personal Control was covered by questions 13-15. Item 3 on the Mastery scale is reverse scored. Respondents answered on a five point Likert scale, '*how things have been going in the past few weeks in your job*' where: 1 = *Strongly Agree*, 2 = *Disagree*, 3 = *Neutral*, 4 = *Agree* and 5 = *Strongly Agree*.

Examples of items are:

*"I have little control over the things that happen to me at work"*

*"There is little I can do to change many of the important things in my life at work."*

A low score on this scale would indicate a high degree of personal Mastery (that is personal control at work). The Cronbachs alpha is 0.74 for the present research.

### 5.6.6 JOB SATISFACTION

The 15 item **Job Satisfaction Scale** was published by Warr, Cook and Wall (1979). It attempts to measure the degree of satisfaction with several current job components. Warr et al. (1979) defined Job Satisfaction as 'the degree to which a person reports satisfaction with intrinsic and extrinsic features of the job'. Respondents were asked how 'generally satisfied' they were with various aspects of their current job. They had to answer on a seven point Likert scale where: 1 = *Extremely Dissatisfied*, 2 = *Very Dissatisfied*, 3 = *Moderately Dissatisfied*, 4 = *Not Sure*, 5 = *Moderately Satisfied*, 6 = *Very Satisfied* and 7 = *Extremely Satisfied*. A high score would indicate a high level of Job Satisfaction. The cut off for a high score is 60; this means individuals scoring above this value are satisfied with their job and those scoring below this value are dissatisfied with their job. Warr et al.'s (1979) scale consists of three sub-scales, measuring, intrinsic Job Satisfaction, extrinsic Job Satisfaction and a third that crosses both these areas; employee relations satisfaction

and a total score can also be calculated. Warr et al. (1979) tested the internal consistency of the scale on two large sample studies (study 1 n=200 and study 2 n=390).

*Intrinsic Job Satisfaction* (items 2, 6, 8 and 14). This covers features inherent in the conduct of the work itself. That is, opportunity for skill utilisation, amount of task variety and opportunity for personal control.

Examples of items from this scale are:

*"The freedom to choose your own method of working"*

*"The amount of responsibility you are given".*

The alpha coefficients for this scale were 0.74 and 0.78 (Warr et al., 1979).

*Extrinsic Job Satisfaction* (items 1, 3, 5, 13, and 15). This addresses aspects of the job that form the background to the work activity itself. That is satisfaction with pay, industrial relations, working conditions and job security.

Examples of items from this scale are:

*"The physical working conditions"*

*"Your fellow workers"*

The alpha coefficients for this scale were 0.79 and 0.85 (Warr et al., 1979).

*Employee Relations Satisfaction* (items 4, 7, 9, 10, 11 and 12). This sub-scale looks at individual recognition and management of behaviour.

Examples of items on the scale are:

*"Your rate of pay"*

*"The recognition you get for good work"*

The alpha coefficients for this scale were 0.79 and 0.85 (Warr et al., 1979).

The internal reliability for the whole scale was 0.86 for total Job Satisfaction (Warr et al., 1979). The present research only examined the total score for Job Satisfaction; the alpha coefficient for the present research was 0.90.



## **5.6.7 PSYCHOLOGICAL WELL-BEING RELATED TO WORK**

To measure psychological well-being related to work, a shortened version of Warr (1979) Job Competence and Job Aspiration scale was used. These two elements are strongly linked to work related (i.e. context specific) psychological well-being. The original scale consisted of six questions each to measure Competence and Aspiration. Warr (1990, 1994) suggested that Competence and Aspiration could also be used as measures of mental health. Job Competence and Job Aspiration were all scored on a five point Likert scale where: 1= *Strongly Disagree* and 5= *Strongly Agree*.

### **5.6.7.1 JOB COMPETENCE**

Warr (1990) describes a competent person as one who has adequate psychological resources to deal with experienced difficulties, and suggests it is the link with affective well-being that is the key. For the present study, only the 4 most relevant and valid items from the Competence scale were used. Warr (1990) found the reliability remained consistent whether four or six items were used and reported a Cronbachs alpha of 0.68 for the six item Competence scale. Competence was covered by four items (questions 1 to 4).

Examples of items on the scale are:

*"I can do my job well"*

*"I sometimes think that I am not very competent at my job."*

The higher the score, the higher an individual assesses him/herself to be competent at their job. The Cronbachs alpha is 0.73 for the present research.

### 5.6.7.2 JOB ASPIRATION

Warr (1990) suggests a mentally healthy person is often viewed as having an interest in and engaging with the environment. He or she establishes goals and makes active efforts to attain them, through motivated behaviour, alertness to new opportunities and efforts to meet challenges that are personally significant. In a working environment one can assess job-related Aspiration by looking at how people seek out challenging tasks and goals. This would reflect a person's intrinsic motivation (Warr et al., 1979) and enthusiasm for the job. For the present study, only the 4 most relevant and valid items from the Aspiration scale were used. Warr (1990) found internal reliability to be consistent whether four or six items were used and reported a Cronbachs alpha of 0.62 for the six item Aspiration scale. Aspiration was covered by four items (questions 5-8).

Examples of items on the scale are:

*"In my job I like to set myself challenging targets"*

*"I am not interested in my job."*

The higher the score, the higher the Aspiration an individual has with respect to their job. The Cronbachs alpha is 0.70 for the present research.



### 5.6.8 GENERAL HEALTH QUESTIONNAIRE

Context-free well-being was assessed using the 12 item version of the **General Health Questionnaire (GHQ)** (Goldberg and Williams, 1988). The GHQ was originally developed for use in a clinical setting. It is a widely used measure to detect psychiatric illness in a community or to 'differentiate psychiatric patients as a class from non cases as a class' (Goldberg and Williams, 1991, p.5). According to Goldberg et al. (1976), the GHQ in its British form (Goldberg, 1972) is a self-administered questionnaire consisting of 60 questions concerned with psychological distress or altered behaviour. However, other versions of the GHQ also exist, that is the GHQ 28, 30 and 12 item versions. The latter two are uni-dimensional like the 60 item version whereas the 28 item version has a four factor structure. For each item the respondent is asked to compare his recent state with his usual state, and an item is only counted as being present if it is being experienced 'more than usual'.

Researchers (Parkes, 1991; Daniels and Guppy, 1992; 1994; West and Reynolds, 1995; Guppy and Weatherstone, 1997) have used it successfully in an Occupational setting, and it is one of the most widely used measures in this field. Comparative data from over 20,000 British adults is available for this scale and has also been used with the Fire services by for example; Brown, 2002. For the present study the 12 item scale was utilised mainly due to its short length. The Likert method of responding is recommended for multivariate statistics (correlations and regressions) by Banks et al. (1980) and this is the method that was used in the present research. Respondents indicated how their health had been over the *last few weeks* on two Likert scales. They were distributed in the following way. Item numbers 1, 3, 5, 7, 9 and 11 were scored on a scale most with the options: *0= Better than usual* to *3= Much less than usual*. Item numbers 2, 4, 6, 8, 10, and 12 on a scale most with the options, *0= Not at all*, to *3= Much more than usual*. Please see Appendix One.

If using the GHQ (clinical) method for scoring, a score of above 2 indicates psychiatric morbidity. If using the Likert method of scoring, a score above 12 indicates psychiatric morbidity.

Goldberg (1997) found Cronbachs alpha of 0.85 for his 12 item scale. For the present research, Cronbachs alpha is 0.91.

### **5.6.9 WORK PERFORMANCE**

A measure of Work Performance was used to give a complete picture of Job Performance. The 5 item **Job Performance** measure was developed by Guppy and Marsden (1997) . Ideally it is to be completed both by the participant and a supervisor. However, owing to the large populations involved in this research, completion by the supervisor was not appropriate. Respondents were asked '*how do you perceive your Work Performance has been over the last 3 months*'. They answered on a five point Likert scale where: 1= *Noticeably worse* and 5= *Noticeably better*.

Examples of items on this scale are:

*Your attendance at work*

*Your overall Work Performance*

*Your relationship with your colleagues*

The higher the score, the better the Work Performance. The Cronbachs alpha is 0.72 (Guppy and Marsden, 1997). For the present research, Cronbachs alpha is 0.86.

### **5.7 PROCEDURE**

Initially, the researcher contacted many Fire Services throughout the UK by telephone. If a Fire Service gave a positive response, the Chief Fire Officer was sent a contact letter. This letter broadly explained the purpose of the research, previous research in the area, and an indication of how much time it would take an individual to participate (highlighting participation was on a voluntary basis). Enclosed with it was a copy of a draft questionnaire. Before the draft was sent, the Brough (1998) Police questionnaire was altered via a small pilot study with 5 fire fighters known to the researcher. Any items deemed completely irrelevant to the Fire Service (e.g. 'going on a raid') were omitted. It was reiterated in the contact letter that, prior to any research, the questionnaire would be further tailored to be more Fire service specific.



From the first Fire Service that agreed to take part in the research, a focus group was formed (this was Sample One). They helped amend the questionnaire to make it bespoke to the Fire Service. The focus group consisted of members attending the station commander meetings, from various levels of the fire service. The number of people attending the meetings varied from 10 to 15 people. The questionnaire was adapted by changing the Biographical section. The Fire specific Daily Uplifts and Hassles scales, and a last section addressing specifics to the fire service. The focus group highlighted that any information that would identify an individual would lower the response rate considerably. The focus group used the example of specifying a respondent's ethnicity, as there were so few non Caucasian Fire-fighters in the fire services generally. This also gave an indication of the highly sensitive nature of the group that were participating in the study. Furthermore, the researcher was not allowed access to the health and sickness records of any of the participating Fire services.

### **5.7.1 GENERAL PROCEDURE FOR ALL SAMPLES**

Once a Fire Service agreed to take part in the study, meetings were arranged with the researcher and the contact in the Occupational Health Department. To increase the response rate, the management agreed each Fire fighter would be allowed one hour of work time to complete the questionnaire, at the discretion of each Station Commander. Also, a pre paid envelope would be provided in which to enclose the completed questionnaire and return it directly to the researcher. The 'survey pack' included a cover letter, consent form, and the questionnaire enclosed in an unsealed pre paid envelope addressed to the researcher at Middlesex University (please refer to Appendix One). The same Questionnaire was used throughout the research. The only exception was the addition of two items to measure gender and age, which were included in all surveys except for Sample One. The General Procedure for all the samples was the same. The only difference between the samples was in the distribution of the survey packs. This was decided by the Service contact.

For all the samples, except Sample One, there were no initial focus groups. A 'survey pack' was sent to each of the contacts, the head of the Occupational Health Department, to examine and get permission from the Chief Fire Officer, and agree participation.

Once participation was agreed, for each of the Fire services, the Researcher met the head of the Occupational Health Department, with the required number of survey packs.

Originally, one Fire Service (Sample One) agreed to take part in a longitudinal study. The survey was to be repeated three times with a gap of six months between each wave. At this point, the Fire Brigade Union (FBU) announced the Fire Services were to strike for the first time in 25 years. Thus the research was delayed by four months. At the end of this period, as there was no foreseeable end to the strike, the Fire service agreed to go ahead with the survey in the middle of the strike (Jan – March 2003). Responses were collected until July 2003. After the first wave of data collection an executive summary of findings was given to the Fire Service in November 2003. They requested time to consider the results of the survey. Following many meetings with the researcher and a delay of another 9 months in August 2004, the Fire Service refused to take part in any further research. The sensitive nature of the climate at the time and the uncertainty of how the management would be viewed if the survey were to be repeated, were given as reasons for not continuing with the research. Two more Fire Services agreeing to a longitudinal survey at two time-points were recruited. However, response rates were too low for each Fire Service for a second wave to be justified. Problems arising from the dispute, as mentioned above, were given as reasons for the low response rates. As a result, a further two Fire Services were recruited. These two services successfully completed the first and second waves of data collection.

Thus, cross sectional research was conducted with the first three samples and longitudinal research with the final two samples. It was believed the surveys at this time would give unique data as to what the Fire fighters' thoughts and feelings were during and as a consequence of the Fire Service strike.

### **5.7.2 DISTRIBUTION OF THE QUESTIONNAIRE**

For **Sample One**, the researcher made appointments with the station commanders and took the survey packs to each fire station personally. Each station commander was given two information sheets. The first ('Explanation of Psychometrics') briefly explained what each



section of the questionnaire was measuring. It was advised this should only be made available to those in charge of distribution. The second sheet gave ' Helpful Hints' (to be mentioned at the time of distribution, to help increase the response rate). It was left up to the station commanders to decide what was the most efficient way to distribute the survey to the fire fighters. Those based at headquarters and non- uniformed support staff were given their survey packs through internal mail.

The survey was carried out between January and March 2003. This was in the middle of the fire strike. Responses were collected until July 2003.

For **Sample Two**, the questionnaires were distributed by the Occupational Health Department by internal mail to the whole Fire Service. This Fire service was surveyed between August 2004 (started distribution of survey packs) and November/December 2004 (responses were collected until this time).

For **Sample Three**, the questionnaires were distributed by Royal Mail and internal mail. All the uniformed staff in the Fire Services had the questionnaire delivered to their home address. Those working at headquarters had theirs sent to them via internal mail. This method of distribution was thought the most effective as this Fire service was 70% Retained staff and 20% Wholetime staff. This Fire service was surveyed between August 2004 (started distribution of survey packs ) and November/December 2004 (responses were collected until this time).

For **Sample Four**, for the first wave of data collection, the survey packs were distributed to the fire fighters on site by the contact at the Occupational Health department. They personally took the required number of questionnaires to each of the Fire stations. For non-uniformed support staff and those based at headquarters they were distributed through internal mail. The first wave was sent out between January 2005 (started distribution of questionnaires) and March/April 2005 (collected responses until this time).

For the second wave of data collection, the contact initially sent out a reminder in the news letter for the Fire service that the second wave of the research was about to start. Once this had been sent out, the distribution was as for the first wave. The second wave of the research was carried out from November 2005 to December 2005 (the questionnaires were

distributed) and collected up to March/April 2006. Identical questionnaires were used for both the first and second waves.

For **Sample Five**, the contact at the Occupational Health Department organised, through their sub-ordinates, for the questionnaires to be distributed to each of the Fire stations. The Head of the Occupational Health Department requested that as each individual received the questionnaire they each signed a sheet. This was to ensure that all staff received a survey pack. Those based at headquarters and non- uniformed support staff received theirs through internal mail. The first wave was sent out March 2005 and responses were collected until June 2005.

For the second wave, the method of distribution was the same as for the first wave. The second wave was sent out between very end of November and December 2005 by the contact at the Fire service and responses were collected until April/May 2006. Identical questionnaires were used for both the first and second waves.



## **5.8 ETHICAL CONSIDERATIONS**

The proposal for the research (including a copy of the cover letter explaining the objective of the research to the participant, the Questionnaire, consent form and Health and Safety Forms were submitted to the Ethical Committee at Middlesex University. Any risk assessment factors, confidentiality issues (anonymity of participants will be maintained at all times) and the fact that the data would only be used for the purpose of the PhD thesis and any publications relevant to the PhD had to be stated. It was agreed that all participants had to fill in the consent form agreeing to participate although recruiting was entirely on a voluntary basis. To ensure confidentiality, participants did not sign the consent form but answered 'yes' or 'no' responses agreeing to take part.

A contact phone number and the e mail address of the researcher were given in the cover letter. It was stated that any participant could use this for queries or for further explanation before and/or after participation.

Once the Middlesex University Psychology Department Ethical Committee was satisfied that all areas of the research met the stringent criteria set by the British Psychological Society, ethical approval was given.

# 6

## CHAPTER SIX

### RESULTS OF THE CROSS-SECTIONAL DATA

#### 6.1 OVERVIEW OF CHAPTER SIX

This chapter is divided into three main sections; Sample Descriptives, Correlational analysis, and Multiple Regression. In each section, the results for all cross sectional Samples (combined) at Time One are reported. The data analysis aims to examine the extent to which stress, Coping and individual differences have an effect on outcome measures of Job Satisfaction, work-related psychological well-being, Work Performance and General mental health and the moderating effects of Coping and individual differences (i.e. hypotheses 1-3 are addressed).

#### 6.2 SAMPLE DESCRIPTIVE:

Table 6.1 illustrates Demographic data for all 5 Samples at Time One.

The total population that responded across the five samples is N= 867. The mean age of the respondents is 39 years (SD =8.46) and comprises 15.5% female and 84.5% male. The majority of the sample (71.9%) were sub-officer and below; 15.8% were support staff and 12.3% were sub-officer and above.

The average length of service was 13 years, (SD = 9.51).However, a closer look reveals that approximately 45% of the population have served up to 10 years, almost a third (30.1%) between 11 and 20 years, a further 21.9% between 21 and 30 years and about 3% of the sample have served between 31 and 40 years.



The majority of the sample (67.3 %) was married, a further 17.8% were not married but in a steady relationship, approximately 7.3% were either divorced or separated, 7.2% were single and 0.4% were widowed.

Table 6.1 Demographic data for All 5 Samples at Time One (N=867)

Items	Frequencies (n; %)				
Category of Staff  N=855	Sub-Officer and below  (615)  71.9%	Station Officer and above  (135)  15.8%	Support Staff  (105)  12.3%	Contractor Staff  (0)  0%	
Length of Service (years) n=827	0-10  (372)  45%	11-20  (249)  30.1%	21-30  (181)  21.9%	31-40  (25)  3%	Mean  13yrs  SD =9.51
Domestic Status N=850	Married  (572)  67.3%	Steady Relationship  (151)  17.8%	Div/Separated  (62)  7.3%	Single  (61)  7.2%	Widowed  (4)  0.4%

*Nb:the n values are different for each item as they are dependent on the number of participants who answered that question.*

6.3 SUBSCALE DESCRIPTIVE

Table 6.2 illustrates the descriptive statistics of the subscales used in the study. The subscales all have a satisfactory level of reliability, the Cronbachs alpha values ranging from 0.70 to 0.96.

The mean score for Job Satisfaction is just above the cut off score of 60 that indicates satisfaction. The mean score for General mental health is above the threshold score,

which indicates that the sample in this study had poor mental health. The responses for the measures of Psychological Well-being at work (Competence and Aspiration) indicate that in this sample respondents considered themselves reasonably competent and had good Aspiration and Work Performance with regards their job.

The mean sources of stress scores indicate that the sample had higher levels of Uplifts compared to levels of Hassles, indicating that the sample overall may experience more Uplifts than Hassles.

The mean Neuroticism score was average. However, the mean Extraversion score was slightly higher in the sample, indicating that respondents may be more extrovert in nature.

With regards Coping, the sample used Direct and Indirect coping methods roughly equally.



Table 6.2: Mean, standard deviations and reliability coefficient of the subscales, N=867

Variables	N	Mean	SD	Alpha	No of items	Higher score indicates
<i>Outcome Measures</i>						
Job Satisfaction	866	66.42	15.21	0.90	15	Greater satisfaction
Competence	859	15.35	2.80	0.73	4	Greater Competence
Aspiration	859	15.73	2.82	0.70	4	Greater Aspiration
General mental health	840	2.15	3.22	0.91	12	2 is the threshold score. Scores above the threshold indicate a psychiatric condition.
Work Performance	859	15.25	2.58	0.86	5	Better Work Performance
<i>Sources of Stress</i>						
Uplifts	862	49.64	11.50	0.86	18	Higher Uplifts
Hassles	851	37.57	14.92	0.87	20	Higher Hassles
<i>Moderator/Mediator</i>						
Neuroticism	860	10.16	3.15	0.78	5	More Neurotic
Extraversion	860	14.25	2.89	0.82	5	More Extrovert
Mastery	858	9.26	2.86	0.74	3	Low Control
Direct coping	859	26.27	4.55	0.73	9	Greater use of Coping
Indirect coping	857	15.96	4.11	0.84	6	Greater use of Coping

Furthermore, the scales for Job Satisfaction, Uplifts and Hassles were analysed at item level to see which three items in each scale had the highest means and which three items had the lowest means.

**Table 6.3 Items with the highest and lowest means on Job Satisfaction**

3 factors resulting in greatest Job Satisfaction	Mean value	3 factors resulting in least Job Satisfaction	Mean value
Your fellow workers	5.55	Industrial relations between management and workers at your workplace	3.22
Amount of variety in your job	5.34	Your rate of pay	3.64
Your immediate boss	5.09	Way you are managed	3.86

The Table 6.3 above suggests that the factors that cause the greatest satisfaction seem to be more individual level factors such as getting on with ones colleagues and the things an individual does within their job. Whereas the factors that seem to cause the least satisfaction are ‘organisational’ level factors such as industrial relations and pay. However this finding could be reflecting the climate at the time of the survey.

**Table 6.4 Items with the highest and lowest means on Uplifts**

3 factors resulting in greatest Uplifts	Mean value	3 factors resulting in least Uplifts	Mean value
Helping the public	3.46	Dealing with fatalities	1.54
Working hard	3.45	Receiving good promotion ratings	1.66
Working with people I like	3.41	Meeting deadlines for everyday activities	2.50



**Table 6.5 Items with the highest and lowest means on Hassles**

3 factors resulting in greatest Hassles	Mean value	3 factors resulting in least Hassles	Mean value
Too much red tape to get something done	2.76	Complaints by the public	1.17
Low morale	2.65	Giving bad news	1.22
Having no say in decisions that affect me	2.47	Going to dangerous calls	1.34

The results from the two scales (Uplifts and Hassles) in Tables 6.4 and 6.5 taken together, broadly suggest that it is the more individual level factors (e.g.; helping the public, working hard, working with people I like) that cause the greatest Uplifts and more organisational based factors that cause the greatest Hassles (e.g.; too much red tape to get things done).

**6.4 CORRELATION ANALYSIS:**

Table 6.6 illustrates the bivariate relationships between the predictor variables (demographic variables, sources of stress and moderator variables) and the outcome measures (Job Satisfaction, psychological well-being at work, General mental health, and Work Performance). The following section will discuss the correlation matrix separately for each of the predictors and the outcome measures.

For the current research correlations of  $r = 0.20$  and above are discussed. The justification for this is that previous research, such as that by Edwards and Baglioni (1990) and Folkman et al. (1986), have reported correlations of  $r=0.1$  and above when they have been statistically significant. However, the current research entails a large sample size of  $N=867$ , which has resulted in statistically significant  $r$  values of even below  $0.10$ . Omission of these statistically significant correlations may result in data loss. Thus for the purpose of the thesis, as stated earlier, only those correlations of above  $r=0.20$  will be discussed.

### **6.4.1 Demographic Variables**

None of the demographic variables had any significant association with the outcome measures.

### **6.4.2 Uplifts and Hassles**

The sources of stress Uplifts scale were significantly associated with Work Aspiration, Job Satisfaction and Work Performance. This indicates that respondents with higher Uplifts scores had higher Aspiration with respect to their jobs, higher Job Satisfaction, and also performed better at work. The Hassles scale had significant negative relationships with the outcome measures Job Satisfaction and Work Performance and a positive relationship with General mental health. This indicates respondents who were more hassled were less satisfied with their jobs, performed worse at work and had poorer mental health.

### **6.4.3 Neuroticism, Extraversion and Mastery (Control)**

The variable Neuroticism was negatively correlated with Job Satisfaction, Work Competence, and work Aspiration but positively associated with General mental health. This indicated respondents who were more neurotic were less satisfied, felt less competent, had lower Aspirations with respect to their jobs and had poorer mental health.

The variable Extraversion had the opposite association with two of the variables and was positively correlated with Work Competence and Work Aspiration. This indicated extraverts felt more competent and aspired higher with respect to their jobs.

The Mastery scale was negatively correlated with Job Satisfaction, Work Aspiration and Work Performance. This suggests that those scoring high on this scale felt more in control of their work, felt more satisfied, aspired higher and felt they performed better at their work.



#### **6.4.4 Coping**

Although the outcome measures Work Competence, Work Aspiration and General mental health were statistically significantly correlated with Direct coping and Job Satisfaction, Work Aspiration and General mental health were significantly correlated with Indirect coping strategies, none of the correlations were above the threshold cut off of  $r=0.2$ .

Table 6.6: Correlation coefficients between the demographic variables, sources of Stress, moderators/mediators and outcome measures

Outcome Measures Subscales	Job Satisfaction	Psychological Well-being at Work Competence	Psychological Well-being at Work Aspiration	General Mental Health	Work Performance
<b>Demographic</b>					
Marital status	0.02	0.07*	0.00	0.05	-0.06
Service yrs	-0.16**	-0.13**	-0.10**	0.07	-0.016**
Sources of Stress					
Uplifts	0.34**	0.10**	0.32**	-0.07	0.21**
Hassles	-0.51**	-0.04	-0.18**	0.28**	-0.21**
<b>Moderators</b>					
Neuroticism	-0.27**	-0.32**	-0.26**	0.41**	-0.16**
Extraversion	0.07*	0.23**	0.22**	-0.09**	0.16**
Mastery(Control)	-0.51**	-0.19**	-0.39**	0.17**	-0.36**
Direct coping	-0.04	0.10*	0.14**	0.08*	0.06
Indirect coping	-0.12**	-0.03	-0.14**	0.13**	-0.05

\*\* p<0.01; \*p<0.05

Correlational values of r =0.2 and above were used to indicate a significant correlation. This cut off was used as the data set was large N= 867



## **6.5 MULTIPLE REGRESSION ANALYSIS (MRA):**

Multiple Regression was used to explore the predictive relationship between the Outcome variables and the Predictor variables. This method allows one to ascertain how much unique variance in each outcome variable is explained by the predictor variables. Before analysis, the data was checked to see if it conformed to assumptions of multiple regression. Amongst these assumptions was that the data set was large enough, such that there is a minimum number of cases per variable. Researchers differ in their guidelines for this. For example, Cohen and Cohen (1983) suggest 20 cases per variable. In the present research, the criteria suggested by Tabachnick and Fidell (1992) were used. They suggest 5 times more cases per number of independent variable. The data set  $N=867$  satisfied this criteria. Also the data satisfied the assumptions of normality (variables have a normal distribution), linearity (that is the relationship between dependent and independent variables are linear in nature), variable type (that is outcomes must be continuous, predictors can be continuous or dichotomous), no multi-collinearity (this exists when the IV's are highly correlated ( $r = 0.9$ )).

The current analysis generally follows Parkes' (1990) procedure for analysis. However, in the present research, different variables were used and direct and Indirect coping measures were entered separately for the interaction terms. The theoretical model proposed in Chapter four underlies the analysis. The extent to which the predictor variables have an influence on the outcome measure was examined via a nine stage Hierarchical multiple regression analysis. In Hierarchical MRA, predictors are entered in blocks; the order of entry is determined by previous research findings and theory. For example, Parkes (1990) emphasises the impact of Neuroticism as mentioned in chapter three.

For each of the outcome measures, the predictor variables, as suggested by the proposed model, were entered. The outcome measures were Job Satisfaction, Work related Psychological well-being (Aspiration and Competence), General mental health and Work Performance, and thus five separate analyses were conducted. The predictor variables were the Demographic variables (Number of years of service and Marital

Status), sources of stress (Uplifts and Hassles), moderator/mediator variables (Neuroticism, Extraversion, and Mastery (Control, and Coping (direct and indirect)). In the First stage the demographic variables were entered; in the Second Stage the moderator/mediator variables; Neuroticism, Extraversion and Mastery were entered; in the Third stage the sources of stress subscales; Uplifts and Hassles were entered. In the Fourth Stage, the interactions between the Neuroticism variable and sources of stress (Uplifts and Hassles) were entered; in the Fifth Stage the interactions between Extraversion and sources of stress were entered; in the Sixth Stage the interactions between Mastery and sources of stress were entered. In the Seventh Stage Coping strategies (Direct and Indirect) were entered; in the Eighth Stage the interactions between the sources of stress subscales and Direct coping strategies were entered, and finally, in the Ninth Stage the interactions between the sources of stress subscales and Indirect coping strategies were entered.

Finally, the procedure used by Guppy & Weatherstone (1997) was used to interpret significant moderator effects. Thus, using simple effect correlations, the nature of the moderator effect was examined. This was done by focusing on each of the significant moderator effects and then splitting the sample to reflect those scoring one standard deviation above the mean on the moderating variable and then correlating the predictor variable in the interaction with the outcome, then repeating this procedure for those scoring one standard deviation below the mean on the moderating variable. The two correlations were then compared.

### **6.5.1 Regression Analysis for Job Satisfaction**

Table 6.7 illustrates the contribution of each of the predictor variables towards predicting Job Satisfaction.

The results show strong significant Direct (Main) effects for Uplifts and Hassles as well as Mastery. There were weaker significant contributions to the prediction of Job Satisfaction from marital status and the number of years of service. There was also a weak significant interaction effect that indicated that Direct coping moderated the



relationship between Hassles and Job Satisfaction, though there were no significant main effects for Coping.

Overall, the final model was significant, ( $F = 44.267$ ,  $df = 19,760$   $p < .001$ ) and the predictors explained 52.5% of variance in Job Satisfaction scores.

Table 6.7 Regression Analysis Predicting Job Satisfaction

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Marital status	.035	.036	.048	.048	.048	.047	.049	*.049	*.050
Service yrs	***.170	***.134	*.058	*.057	*.058	*.057	*.058	*.056	*.056
Neuroticism		***.139	-.042	-.042	-.041	-.044	-.039	-.039	-.037
Extraversion		-.031	-.039	-.039	-.041	-.040	-.035	-.030	-.029
Mastery		***.480	***.286	***.286	***.286	***.286	***.289	***.288	***.288
Uplifts			***.320	***.320	***.320	***.309	***.309	***.310	***.310
Hassles			***.457	***.457	***.454	***.451	***.444	***.449	***.448
Neuroticism x Uplifts				-.007	-.011	-.027	-.023	-.018	-.019
Neuroticism x Hassles				-.007	-.002	.006	.002	.013	.013
Extraversion x Uplifts					-.026	-.018	-.016	-.014	-.015
Extraversion x Hassles					.027	.022	.021	.025	.026
Mastery x Uplifts						.046	.049	.036	.039
Mastery x Hassles						-.015	-.016	-.022	-.027
Direct coping							-.035	-.042	-.042
Indirect coping							-.010	-.003	-.005
Direct coping x Uplifts								-.039	-.032
Direct coping x Hassles								-.043	*.056
Indirect x Uplifts									-.019
Indirect x Hassles									.032
R <sup>2</sup> change per stage	.029	.281	.206	.000	.001	.002	.001	.003	.001

Final model summary: R =.725, R<sup>2</sup> =.525, Adj R<sup>2</sup> =.513, F = 44.267, df 19,760, p <.001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05



In summary:

The results indicate that high levels of Mastery, increased Uplifts and lower levels of Hassles are the most influential predictors of high Job Satisfaction. The weaker significant main effects suggested that Job Satisfaction was higher in those with partners and fewer number of years in service. The interaction between Direct coping and Hassles was not significant when initially entered into the equation ( $p = 0.085$ ) and thus would not appear to make a strong contribution to the equation. With respect to the significant interaction between Direct coping and Hassles predicting Job Satisfaction. In order to examine the nature of the interaction, the sample was split on the moderator and the correlation between the predictor and outcome were compared at high and low levels of the moderator. High levels were one standard deviation above the mean and low levels were one standard deviation below the mean. This showed that although a moderating effect was found, for those using more Direct coping there was a significant negative correlation between Hassles and Job Satisfaction ( $r = -.545$ ) and for those using less Direct coping there was a only a slightly stronger significant negative correlation ( $r = -.605$ ). Overall, this suggests there is a stronger relationship between Hassles and reduced Job Satisfaction for those using less Direct coping. However, this interaction remains unclear because the correlations are almost the same.

### **6.5.2 Regression Analysis predicting Work related Aspiration**

Table 6.8 illustrates the contribution of each of the predictor variables towards predicting Aspiration.

The results show strong significant Direct (Main) effects for Neuroticism, Extraversion, Mastery, Uplifts and Direct coping. There were weaker significant contributions to the prediction of Aspiration from Hassles and Indirect coping. There were significant interaction effects that indicated Extraversion moderated the relationship between Hassles and Aspiration, and Mastery and Indirect coping moderated the relationship between Uplifts and Aspiration.

Overall the final model was significant ( $F = 17.306$ ,  $df = 19, 760$ ,  $p < .001$ ), and the predictors explained 30.2% of the variance in Aspiration scores.

Table 6.8: Regression Analysis Predicting Work related Aspiration

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Marital status	.014	.019	.017	.016	.014	.012	.005	.006	.010
Service yrs	**-.102	-.054	-.041	-.040	-.044	-.041	-.038	-.035	-.034
Neuroticism		***-.156	***.129	***.121	***.118	***.124	***.134	***.131	***.124
Extraversion		***.147	***.121	***.121	***.120	***.121	**100	**104	***.104
Mastery		***-.324	***.239	***.241	***.242	***.243	***.217	***.215	***.222
Uplifts			***.225	***.218	***.213	***.191	***.181	***.181	***.184
Hassles			**-.105	**-.102	**-.095	*-.085	**-.106	**-.108	**-.103
Neuroticism x Uplifts				.051	.039	.009	.010	.014	.002
Neuroticism x Hassles				-.034	-.020	-.012	-.005	-.004	-.002
Extraversion x Uplifts					-.050	-.035	-.039	-.036	-.032
Extraversion x Hassles					**097	**088	**088	**089	**093
Mastery x Uplifts						**097	*077	.064	*089
Mastery x Hassles						-.005	-.011	-.015	-.010
Direct coping							***.123	***.120	***.131
Indirect coping							**-.086	*-.082	*-.085
Direct coping x Uplifts								-.040	-.028
Direct coping x Hassles								-.002	-.026
Indirect x Uplifts									*-.108
Indirect x Hassles									.028
R <sup>2</sup> change per stage	.010	.199	.044	.004	.010	.007	.015	.001	.010

Final model summary: R =.550, R<sup>2</sup> =.302, Adj R<sup>2</sup> =.285, F = 17.306, df 19,760, p <.001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05



In summary:

The results indicate that low levels of Neuroticism and Indirect coping, and high levels of Extraversion, Mastery, Uplifts and Direct coping are the most influential predictors of high Aspiration. The interactions indicated Extraversion moderated the relationship between Hassles and Aspiration. Mastery, and Indirect coping moderated the relationship between Uplifts and Aspiration.

Thus with respect to the significant interaction between Extraversion and Hassles predicting job Aspiration the moderating effect indicated for those with high Extraversion there was a correlation between Hassles and Work Aspiration ( $r = .083$ ) and those with low Extraversion, there was a negative correlation ( $r = -.353$ ) between Work Aspiration and Hassles. This suggests there is a strong relationship between Hassles and decreased Aspiration for those with low Extraversion.

Regarding the significant interaction between Mastery and Uplifts in the prediction of Work Aspiration the moderating effect indicated, for those scoring high on Mastery (low control) there was a significant positive correlation between Uplifts and Aspiration ( $r = .432$ ). Whereas for those scoring low on Mastery (high control) the correlation was ( $r = .027$ ) between Uplifts and Work Aspiration was non-significant. This suggests there is a stronger relationship between Uplifts and increased Aspiration for those with low Mastery (control), (as a high score on Mastery indicates low control). This is not as would be expected and it is not clear why this would be.

With respect to the significant interaction between Indirect coping and Uplifts in the prediction of Work Aspiration the moderating effect indicated for those scoring high on Indirect coping there was a significant positive correlation between Uplifts and Aspiration ( $r = .224$ ). Whereas for those scoring low on Indirect coping the correlation was ( $r = .499$ ) between Uplifts and job Aspiration. This suggests there is a stronger relationship between Uplifts and increased Aspiration only for those using less Indirect coping.

**6.5.3 Regression Analysis predicting Work related Competence**

Table 6.9 illustrates the contribution of each of the predictor variables towards predicting Competence.

The results show strong significant Direct (Main) effect for Neuroticism, Extraversion, and Number of years of service for Competence. There was a weaker significant contribution to the prediction of Competence from Mastery. Neither Direct nor Indirect coping had significant main effects. There was also a significant interaction that indicated Neuroticism moderated the relationship between Uplifts and Competence.

Overall, the final model was significant ( $F = 9.876$ ,  $df = 19,760$ ,  $p < .001$ ), and the predictors explained 19.8% of the variance in Competence scores.



Table 6.9 Regression Analysis Predicting Work related Competence

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Marital status	.050		.050	.049	.049	.048	.046	.046	.046
Service yrs	***.143	***.184	***.180	***.179	***.178	***.179	***.180	***.182	***.182
Neuroticism		***-.270	***-.274	***-.269	***-.268	***-.268	***-.272	***-.269	***-.269
Extraversion		***.212	***.209	***.212	***.212	***.211	***.204	***.205	***.205
Mastery		**-.089	*-.093	**-.096	**-.096	**-.097	**-.088	**-.087	**-.088
Uplifts			.004	-.006	-.006	-.002	-.005	-.006	-.005
Hassles			.020	.025	.025	.026	.019	.019	.019
Neuroticism x Uplifts				*.077	*.076	*.081	*.081	*.082	*.080
Neuroticism x Hassles				-.005	-.004	-.015	-.012	-.016	-.015
Extraversion x Uplifts					-.001	-.004	-.006	-.004	-.003
Extraversion x Hassles					.010	.014	.014	.012	.013
Mastery x Uplifts						-.007	-.013	-.019	-.015
Mastery x Hassles						.031	.029	.029	.032
Direct coping							.044	.045	.047
Indirect coping							-.025	-.024	-.024
Direct coping x Uplifts								-.016	-.016
Direct coping x Hassles								.014	.014
Indirect x Uplifts									-.014
Indirect x Hassles									-.005
R <sup>2</sup> change per stage	.024	.165	.000	.006	.000	.001	.002	.000	.000

Final model summary: R =.445, R<sup>2</sup> =.198, Adj R<sup>2</sup> =.178, F = 9.872, df 19,760 p <.001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05

In summary:

The results indicate that low levels of Neuroticism, and high levels of Extraversion and greater Number of years of service are the most influential predictors of high Competence. The weaker significant main effect suggested that Competence was higher in those with higher levels of Mastery. The interaction indicated that Neuroticism moderated the relationship between Uplifts and Competence.

With respect to the significant interaction between Neuroticism and Uplifts in the prediction of job Competence, the moderating effect indicated that for those scoring high on Neuroticism there was a significant positive correlation between Uplifts and Work Competence ( $r = .170$ ). Whereas for those scoring low on Neuroticism there was a non-significant correlation between Uplifts and job Competence ( $r = .014$ ). This suggests there is a relationship between Uplifts and increased job Competence only for those scoring high in Neuroticism. This is an unexpected finding and it is not clear why this should be so.

**6.5.4 Regression Analysis predicting General mental health**

Table 6.10 illustrates the contribution of each of the predictor variables towards predicting General mental health.

The results show strong significant Direct (Main) effect of Neuroticism, Mastery and Hassles. There was a weaker significant contribution to the prediction of General mental health from Uplifts. There were significant interactions effects that indicated Neuroticism moderated the relationship between both Uplifts and Hassles and General mental health, and Mastery moderated the relationship between Hassles and General mental health. Neither Direct nor Indirect coping methods had moderating effects on General mental health.

Overall the final model was significant ( $F = 25.152$ ,  $df\ 19,741$ ,  $p < .001$ ), the predictors explained 39.2% of the variance in General mental health scores.



Table 6.3.4: Regression Analysis Predicting General mental health:

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Marital status	-.019	-.008	-.011	-.008	-.007	-.009	-.009	-.009	-.007
Service yr	.055	.029	.004	-.003	.000	.002	.002	.004	.004
Neuroticism		***.489	***.457	***.439	***.436	***.436	***.435	***.437	***.439
Extraversion		-.045	-.045	-.042	-.044	-.047	-.047	-.043	-.044
Mastery		***.197	***.137	***.139	***.141	***.139	***.140	***.142	***.138
Uplifts			**-.094	**-.081	*-.077	*-.070	*-.070	*-.070	*-.068
Hassles			***.152	***.144	***.144	***.148	***.147	***.144	***.146
Neuroticism x Uplifts				**-.073	*-.074	*-.066	*-.066	*-.062	*-.066
Neuroticism x Hassles				***.103	***.099	*.076	*.076	**080	**081
Extraversion x Uplifts					-.018	-.023	-.023	-.021	-.019
Extraversion x Hassles					-.029	-.022	-.021	-.019	-.018
Mastery x Uplifts						-.003	-.003	-.016	-.007
Mastery x Hassles						*.070	*.070	*.067	*.072
Direct coping							.002	-.002	.002
Indirect coping							.003	.008	.008
Direct coping x Uplifts								-.038	-.037
Direct coping x Hassles								-.016	-.018
Indirect x Uplifts									-.034
Indirect x Hassles									-.008
R <sup>2</sup> change per stage									

Final model summary: R =.626, R<sup>2</sup> =.392, Adj R<sup>2</sup> =.376, F = 25.152, df 19,741, p <.001

\*\*\* p<.001; \*\* p<.01; \*p<.05

In summary:

The results indicate that high levels of Neuroticism, Mastery and Hassles were the most influential predictors of poorer mental health. That is, those higher in Neuroticism who experienced more Hassles had lower Mastery scores, had poorer General mental health. The weaker significant main effect suggested that there was also poorer mental health in those with lower Uplifts scores. The interactions indicated that Neuroticism moderated the relationship between Uplifts and General mental health and also Hassles and General mental health. The remaining significant interaction indicated Mastery moderated the relationship between Hassles and General mental health.

With respect to the significant interaction between Mastery and Hassles in the prediction of General mental health, the moderating effect indicated that for those scoring high on Mastery there was a significant positive correlation between Hassles and General mental health ( $r = .399$ ). Whereas for those scoring low on Mastery the correlation between Mastery and General mental health was ( $r = .112$ ). This suggests there is a relationship between Hassles and poorer General mental health for those with low control (a high score on Mastery = low control).

Regarding the significant interaction between Neuroticism and Hassles in the prediction of General mental health, the moderating effect indicated that for those scoring high on Neuroticism the correlation ( $r = .382$ ) between Hassles and General mental health was significant. For those scoring low on Neuroticism the correlation ( $r = .211$ ) between Hassles and General mental health was slightly weaker but significant. This suggests there is a stronger relationship between Hassles and poorer General mental health for those scoring higher in Neuroticism.

With respect to the significant interaction between Neuroticism and Uplifts in the prediction of General mental health, the moderating effect indicated that both correlations were small and not significant. Those high in Neuroticism had a negative correlation of  $r = -.155$  between Uplifts and General mental health. Whereas for those scoring low on Neuroticism there was a positive correlation of  $r = .002$  between Uplifts and General mental health. From these results it is not clear what the



moderating effect is, there is a trend towards a relationship between Uplifts and poor General mental health for those high in Neuroticism, which is not as would be expected but it is not possible to draw any conclusions as both correlations were not significant.

**6.5.5 Regression Analysis predicting Work Performance:**

Table 6.11 illustrates the contribution of each of the predictor variables towards predicting Work Performance. The results show strong significant Direct (Main) effects for Uplifts, Mastery and Number of years in service. There was a weaker significant contribution to the prediction of Work Performance from Hassles. There was also a significant interaction effect that indicated that Neuroticism moderated the relationship between Uplifts and Work Performance. There were no significant main effects nor interactions for Direct and Indirect coping methods.

Overall, the final model was significant ( $F=10.709$ ,  $df\ 19,760$ ,  $p<.001$ ), the predictors explained 21.1% of the variance in Work Performance scores.

Table 6.11 Regression Analysis Predicting Work Performance

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Marital status	-.054	-.050	-.048	-.051	-.051	-.052	-.053	-.052	-.050
Service yrs	***-.173	***-.137	***-.122	***-.121	***-.121	***-.120	***-.120	***-.117	***-.117
Neuroticism		-.053	-.029	-.017	-.018	-.018	-.025	-.023	-.020
Extraversion		*.067	.055	.057	.056	.055	.049	.054	.054
Mastery		***-.336	***-.274	***-.278	***-.278	***-.278	***-.275	***-.272	***-.276
Uplifts			***.138	***.123	***.124	***.126	***.126	***.127	***.128
Hassles			**-.105	**-.098	**-.097	**-.095	**-.103	**-.108	**-.106
Neuroticism x Uplifts				***.110	***.107	**.108	**.104	**.110	**.105
Neuroticism x Hassles				-.039	-.038	-.045	-.041	-.032	-.032
Extraversion x Uplifts					-.019	-.020	-.022	-.020	-.018
Extraversion x Hassles					.002	.004	.006	.009	.011
Mastery x Uplifts						.002	-.001	-.017	-.007
Mastery x Hassles						.022	.024	.018	.021
Direct coping							.041	.034	.038
Indirect coping							.014	.021	.020
Direct coping x Uplifts								-.048	-.044
Direct coping x Hassles								-.031	-.040
Indirect x Uplifts									-.044
Indirect x Hassles									.007
R <sup>2</sup> change per stage	.034	.136	.020	.013	.000	.000	.002	.003	.002

Final model summary: R =.460, R<sup>2</sup> =.211, Adj R<sup>2</sup> =.191, F = 10.709, df 19,760 p <.001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05



In summary:

The results indicate high levels of Uplifts, Mastery and fewer the number of years in service are the most influential predictors of better Work Performance. The weaker significant main effect suggests that lower levels of Hassles was a predictor of better Work Performance. The interaction indicated that Neuroticism moderated the relationship between Uplifts and Work Performance.

With respect to the significant interaction between Neuroticism and Uplifts in the prediction of Work Performance, the moderating effect indicated that for those scoring high on Neuroticism the correlation was  $r = .217$  between Uplifts and Work Performance. Whereas for those scoring low on Neuroticism the correlation was virtually zero ( $r = .081$ ) between Uplifts and General mental health, but neither correlation was significant. This suggests there is a relationship between Uplifts and increased Work Performance for those with high Neuroticism. This is not as would be expected but it is not possible to draw any conclusions as both correlations were not significant.

**6.6 CONCLUSION**

The results of the analyses are for all 5 samples at Time One and the findings for the various Outcomes measures relating to Hypotheses 1, 2 and 3 are summarised below in Table 6.12

**Table 6.12 SUMMARY TABLE - To illustrate the significant effects for all 5 Samples**

<b>Outcome measure</b>	<b>Job Satisfaction</b>	<b>Aspiration</b>	<b>Competence</b>	<b>General mental health</b>	<b>Work Performance</b>
<b>Hyp. 1: Main effects of Uplifts and Hassles</b>	Uplifts and Hassles	Uplifts and Hassles	No Main effects	Uplifts and Hassles	Uplifts and Hassles
<b>Hyp. 2: Main effects of Indifference and Coping</b>	Mastery	Neuroticism, Extraversion, Mastery, Direct and Indirect coping	Neuroticism, Extraversion and Mastery	Neuroticism and Mastery	Mastery
<b>Hyp. 3: Interaction effects</b>	Direct coping moderated relationship with Hassles	Extraversion moderated relationship with Hassles; Mastery and Indirect coping moderated relationship with Uplifts	Neuroticism moderated relationship with Uplifts	Mastery moderated relationship with Hassles; Neuroticism moderated relationship with Hassles and Uplifts.	Neuroticism moderated relationship with Uplifts
<b>Rsquare</b>	0.525	0.301	0.198	0.217	0.202



For Hypothesis 1: Hassles and Uplifts will have a main effect on Outcome variables

The work Uplifts measure was shown to have a significant main effect contributor to the prediction of both Job Satisfaction and Work Aspiration, Work Performance and General mental health. That is increased Uplifts is predictive of greater Job Satisfaction, higher Aspiration, better Work Performance and better mental Health. However, Uplifts was not shown to be a significant predictor of Work Competence. The work Hassles measure was found to be a significant main contributor to the prediction of Job Satisfaction, Work Aspiration, Work Performance and General mental health. That is lower Hassles was predictive of greater Job Satisfaction, Work Aspiration and Work Performance, and better mental health. Hassles was not shown to be a significant predictor of Work Competence. Overall, the hypothesis was supported except in the case of Work Competence.

For Hypothesis 2: Individual differences and Coping strategies will have a main effect on outcome measures. (For e.g. Parkes 1990) -suggests there is a main effect for Neuroticism and Coping on GHQ).

Neuroticism was found to be a significant main effects predictor of General mental health, Work Aspiration and of Work Competence. However, Neuroticism was not found to predict Job Satisfaction or Work Performance. That is low levels of Neuroticism were predictive of better mental health, greater Work Aspiration and feelings of Work Competence.

Extraversion was found to be a significant main effects predictor of Work Aspiration and Work Competence, but not of Job Satisfaction, Work Performance and General mental health. That is high levels of Extraversion were predictive of greater Work Aspiration and Work Competence. Work-related control (Mastery) was found to be a strong significant predictor of Job Satisfaction, Work Aspiration, Work Competence, Work Performance and General mental health. That is increased Mastery was predictive of greater Job Satisfaction, higher Work Aspiration and Work Competence and better Work Performance and better mental health.

Direct and Indirect coping was found to be a strong significant predictor of Work Aspiration (supporting Parkes' findings). Coping did not have any contribution to the prediction of Job Satisfaction, Work Competence, General mental health, or Work Performance.

Overall, the hypothesis was supported for Mastery and partially supported for Extraversion and Neuroticism. However, in general it was not supported for Coping.

For Hypothesis 3: The relationship between Uplifts and Hassles and Outcome measures will be moderated by Individual differences and Coping strategies (For example, Parkes (1990) suggests Main and Moderator effects for Neuroticism and Coping).

In terms of the interaction between the Hassles and Uplifts factors and Neuroticism, there were four significant effects. That is in the prediction of Work Competence, Work Performance and General mental health. That is Neuroticism moderated the relationship between Work Competence and Uplifts, which indicated there is a relationship between Uplifts and increased Work Competence only for those scoring high in Neuroticism. Also between Work Performance and Uplifts showing there is a relationship between Uplifts and increased Work Performance only for those with high Neuroticism. Both these results were unexpected and it is not clear why this would be. The moderating effect of Neuroticism on the relationship between Uplifts and General mental health suggested that the results did not clearly indicate what the moderating effect was. There was a trend towards a relationship between Uplifts and poor General mental health for those high in Neuroticism, which was not as would be expected but it was not possible to draw any conclusions as both correlations were not significant. Neuroticism also moderated the relationship between General mental health and Hassles. This suggested there was a stronger relationship between Hassles and poorer General mental health for those scoring higher in Neuroticism

With respect to the moderating effects of Extraversion, this was found to moderate the relationship between Hassles and Aspiration. The results suggested there is a relationship between Hassles and decreased Aspiration for those with low Extraversion. In relation to the individual difference Mastery, this moderated the



relationship between Uplifts and Aspiration, which suggested there is a relationship between Uplifts, and increased Aspiration for those with low Mastery (control), this was not as would be expected, it is not clear why this could be. Mastery also moderated the relationship between Hassles and General mental health and indicated there is a stronger relationship between Hassles and poorer General mental health for those with low control (scoring high on Mastery).

As regards the moderating effect of Coping on the link between Uplifts and Hassles and outcome measures, there were two significant effects. Direct coping moderated the relationship between Job Satisfaction and Hassles. Overall, this suggests there is a stronger relationship between Hassles and reduced Job Satisfaction for those using less Direct coping. In addition, Indirect coping moderated the relationship between Work Aspiration and Uplifts, suggesting there is a stronger relationship between Uplifts and increased Aspiration only for those using less Indirect coping. Taken together, there is limited support for the findings reported by Parker (1990).

The results of the cross sectional analysis show that all three hypotheses are partially supported by the findings. This will be discussed further in Chapter nine.

Consequently, Path Analysis will be conducted on the cross sectional and longitudinal from samples four and five and Hypothesis 5 will be investigated in the longitudinal dataset

The next chapter addresses the results of the Longitudinal Data.

# 7

## CHAPTER SEVEN

### RESULTS OF THE LONGITUDINAL DATA

#### 7.1 OVERVIEW OF CHAPTER SEVEN

This chapter is divided into five main sections. The first section is Background information, which describes the current research, the rationale for the longitudinal research design, and the multivariate statistics used for this part of the study. The next section provides descriptive statistics. This is followed by the statistical analyses, beginning with Correlational Analysis, followed by Hierarchical Multiple regression Analyses and finally Path Analyses for both the cross sectional and longitudinal sample. Except for the Path analysis, in each section the results for the repeated measures sample four and five are used.

#### 7.2 BACKGROUND

The methodology underlying the research reported in this chapter is a longitudinal repeated measures design. Unfortunately, due to unforeseen and unexpected occurrences (such as the first Fire Service strike in 25 years) only two out of the five samples completed the second wave of data collection, allowing longitudinal analyses. The remaining three samples were included in cross sectional analyses only.



There are relatively few published longitudinal design work well-being studies, as compared to cross sectional studies, and even fewer that incorporate a repeated measure design. The current study is a two wave repeated measures longitudinal design. It follows previous studies that included two waves of data collection (for example, House et al., 1986; Carayon, 1993; Zapf and Frese, 1991; Daniels and Guppy, 1994). The two samples were measured at two time points using the same questionnaire, so all variables were measured at both time points. This was to enable the detection of causal relationships. The time lag between wave One and wave Two of data collection ranged between five and seven months for the two Fire services.

### **7.2.3 RATIONALE FOR THE STATISTICAL ANALYSIS**

In the current research, multivariate statistics are being used to analyse the longitudinal data. The procedures are initially the same as for the cross sectional data) reported in chapter six, i.e. product moment correlation coefficients to look for associations between the outcome measures and the predictor variables. This method was used by Warr (1994) (product moment correlation coefficients) to look for linear relationships between specific job characteristics and employee well-being. Although according to the literature there is debate about which is a preferable method for examining longitudinal well-being data (please refer to Zapf et al., 1996, for a meta analysis), one of the most commonly used methods is Hierarchical multiple regression analysis (for example, Daniels, 1992; Parkes, 1994; Moyle 1995; 1997; Brough, 1998). Hence, as in chapter six the current research used this method in a similar format to Parkes (1990) to explore the predictors of both job specific and context free psychological well-being. Within the current research, certain demographic (marital status and number of serving years) and dispositional (Extraversion, Neuroticism, Mastery and Coping) variables have been identified through literature reviews as being likely to influence the effects of the analysis. However, only the dispositional characteristics were incorporated into the model. The effects of Time 1 outcome variables were controlled for in the analyses. As in chapter six, the variables mentioned above were entered in the regression analyses in order to see their influence on

each of the outcome variables (Job Satisfaction, work well-being as measured by Aspiration and Competence, General mental health and Work Performance). Moderator effects of the individual difference variables and Coping were also examined.

In addition, Path Analysis was used to explore causal relationships between variables in the proposed model of stress. Path analysis enables multiple regression procedures to be utilised to calculate quantitative estimates of both direct and indirect causal connections between variables in a model. These estimates are calculated through path coefficients, which consist of the standardised regression beta coefficients or effect coefficients. These beta coefficients can be directly compared to examine which predictor variable has the greatest influence upon the outcome variable. Using these coefficients, a Path diagram can be produced to illustrate the direct and indirect relationships between the variables (Bryman and Cramer, 1993; Tabachnick and Fidell, 1996). Thus, possible Mediator effects of the individual difference variables and Coping were examined. Path analyses were conducted for each of the five outcome variables, once for the cross-sectional data and once for the longitudinal data.

Before addressing the statistical analysis, the next section will provide descriptive statistics for all the measured variables.

**7.3 SUBSCALE DESCRIPTIVES**

Table 7.1 illustrates the descriptive statistics for the longitudinal dataset. The mean score for Job Satisfaction is above the cut off score of 60 that indicates satisfaction. The mean score for General mental health is above the threshold score, which indicates that the sample in this study had poor mental health. The responses for the measures of Psychological Well-being at work (Competence and Aspiration) indicate that in this sample respondents considered themselves reasonably competent and had good Aspiration with regards their job and had good Work Performance.



The mean sources of stress scores indicate that the sample had higher levels of Uplifts compared to levels of Hassles, indicating that the sample overall may experience more Uplifts than Hassles.

The mean Neuroticism score was average. However, the mean Extraversion score was slightly higher, indicating that respondents may be more extravert in nature.

With regards to Coping, on average the sample used Direct coping (verified by higher mean scores for this measure) slightly more than Indirect coping methods.

The average age of the sample was 39 years, with regards marital status approximately 84% of the sample were married and 16% were not married, divorced/separated, widowed or single.

**Table 7.1: Means and Standard Deviations for the Outcome measures, Moderators, Sources of Stress and Demographic variables for the Longitudinal dataset (N=123).**

NB: The values for Time Two of the longitudinal dataset is reported (as the mean values for Time One and Time Two were very similar).

Variable	Mean	Std. Deviation	N
JOB SATISFACTION	67.55	16.01	118
COMPETENCE	15.04	2.97	122
ASPIRATION	15.68	2.66	122
GENERAL MENTAL HEALTH	2.80	3.87	123
WORK PERFMANCE	14.91	2.41	122
NEUROTICISM	10.11	3.09	123
EXTRAVERSION	13.54	3.14	123
MASTERY	10.22	2.76	123
UPLIFTS	47.96	12.99	119
HASSLES	36.93	14.67	121
DIRECT COPING	26.32	4.24	120
INDIRECT COPING	16.31	4.32	121
SERVICE YRS	13.18	10.01	121

Furthermore, the scales for Job Satisfaction, Uplifts and Hassles were analysed at item level to see which three items in each scale had the highest means and which three items

had the lowest means. Again as there was little difference in the items (and for continuity), Time Two of the longitudinal dataset are reported throughout.

**Table 7.2 Items with the highest and lowest means on Job Satisfaction**

3 factors resulting in greatest Job Satisfaction	Mean value	3 factors resulting in least Job Satisfaction	Mean value
Your fellow workers	5.59	Industrial relations between management and workers at your workplace	3.16
Your immediate boss	5.24	Physical work condition'	3.68
Amount of variety in your job	5.12	Your rate of pay'	3.80

Table 7.2 shows that the factors that cause the greatest satisfaction seem to be more individual level factors such as getting on with ones colleagues and the things an individual does within their job. Whereas the factors that seem to cause the least satisfaction are 'organisational' level factors such as industrial relations and pay. However this finding could be reflecting the climate at the time of the survey.

The findings for Uplifts are shown in the table below.

**Table 7.3 Items with the highest and lowest means on Uplifts**

3 factors resulting in greatest Uplifts	Mean value	3 factors resulting in least Uplifts	Mean value
Working hard	3.38	Dealing with fatalities	1.43
Working with people I like	3.30	Receiving good promotion ratings	1.45
Helping the public	3.20	Meeting deadlines for everyday activities	2.28

The findings for Hassles are shown in the table 7.4.



**Table 7.4 Items with the highest and lowest means on Hassles**

3 factors resulting in greatest Hassles	Mean value	3 factors resulting in least Hassles	Mean value
Too much red tape to get something done	2.70	Complaints by the public	1.11
Having no say in decisions that affect me	2.54	Going to dangerous calls	1.12
Excessive paperwork	2.51	Too much supervision	1.43

The results from the two scales (Uplifts and Hassles) in Tables 7.3 and 7.4 broadly suggest that it is the more individual level factors (e.g., working hard, working with people I like) that cause the greatest Uplifts and more organisational based factors that cause the greatest Hassles(e.g., too much red tape to get things done).

The next section will address the Correlational analysis.

**7.4 CORRELATION ANALYSIS**

Table 7.5 illustrates the bivariate relationships between the predictor variables (demographic variables, sources of stress and moderator/mediator variables) and the outcome measures (Job Satisfaction, Aspiration and Competence (psychological well-being at work), General mental health, and Work Performance). The following section will discuss the correlation matrix separately for each of the predictors and the outcome measures. Again, as there was little difference in the correlations and for continuity, the Time Two data of the longitudinal dataset are reported.

For the current longitudinal data, as for the cross sectional data analysed in chapter six, correlations of  $r = 0.20$  and above are discussed. The justification for this is outlined in Chapter Six.

### **7.4.1 Demographic Variables**

The only demographic variable that had a significant association with an outcome measure was number of years of service. It was negatively associated with Job Satisfaction, indicating that the greater the number of years of service, the less satisfied individuals are with their jobs.

### **7.4.2 Uplifts and Hassles**

The sources of stress Uplifts scale were significantly positively associated with Job Satisfaction, Work Aspiration and Work Performance. This indicates that respondents with higher Uplifts scores were more satisfied with their jobs, had higher Aspiration with respect to their jobs and performed better at work. Uplifts was also significantly negatively associated with General mental health suggesting, the more uplifted the person is, the better their General mental health. The Hassles scale had significant negative relationships with Job Satisfaction and Work Aspiration. This indicates that respondents who experienced more Hassles were less satisfied with their jobs and had lower Aspirations with respect to their jobs. The Hassles scale was significantly negatively associated with General mental health indicating that those who are more hassled also had poorer mental health.

### **7.4.3 Neuroticism, Extraversion and Mastery (Control)**

The moderator variable Neuroticism was negatively correlated with Job Satisfaction, Work Competence, Work Aspiration and Work Performance, but positively associated with General mental health. This indicated that respondents who were more neurotic were less satisfied, felt less competent, had lower Aspirations and performed more poorly with respect to their jobs and had poorer mental health.

The moderator variable Extraversion had the opposite association with three of the variables and was positively correlated with Work Competence, Work Aspiration and



Work Performance. This indicated that extraverts felt more competent and had higher Aspirations and performed better in their jobs.

Mastery scale was negatively correlated with Job Satisfaction and Work Aspiration, Work Competence and Work Performance but positively associated with General mental health. This suggests that individuals who felt more in control of their work, felt more satisfied, more competent, had higher Aspirations, felt they performed better at their work and had good mental health.

#### **7.4.4 Coping**

None of the outcome measures were statistically significantly correlated with Direct coping but Job Satisfaction and Work Aspiration were significantly negatively correlated with Indirect coping strategies. This suggests that those who used Indirect coping strategies were less satisfied with their jobs and had lower Aspirations with respect to their jobs.

**Table 7.5: Correlation coefficients between the demographic variables, sources of stress, individual differences and outcome measures for the longitudinal dataset.**

<b>Outcome Measures Subscale</b>	<b>Job Satisfaction</b>	<b>Psychological Well-being at work Competence</b>	<b>Psychological Well-being at work Aspiration</b>	<b>General mental health</b>	<b>Work Performance</b>
<b>Demographics</b>					
Marital status	-.08	.15	.01	.16	-.15
Service yrs	-.20*	.04	-.13	.09	-.13
<b>Sources of Stress</b>					
Uplifts	.40**	-.16	.43**	-.21*	.24**
Hassles	-.54**	.02	-.20*	.34**	-.03
<b>Moderators</b>					
Neuroticism	-.47**	-.23*	-.33**	.67**	-.32**
Extraversion	.070	.25**	-.33**	-.29**	.14
Mastery (Control)	-.45**	-.27**	-.31**	.30**	-.35**
Direct coping	.09	.14	.05	-.07	.10
Indirect coping	-.29**	.06	-.33**	.14	-.09

\*\* p<0.01; \*p<0.05

r values of 0.2 and above were used to indicate a significant correlation (N= 123)



## **7.5 HIERARCHICAL MULTIPLE REGRESSION ANALYSIS (HMRA)**

Hierarchical Multiple Regression was used to explore the predictors of Time 2 outcome variables. This method allows one to ascertain how much unique variance in each Time 2 outcome variable is explained by the predictor variables. Before analysis, the data was checked to see if it conformed to assumptions of Hierarchical Multiple Regression ( the same as those described for Multiple Regression in chapter six). Amongst these assumptions was that the data set was large enough, such that there is a minimum number of cases per variable. In the present research, the criteria suggested by Tabachnik and Fidell (1992) were used. They suggest 5 times more cases per number of independent variables. The data set of  $N = 123$  satisfied this criteria. In addition, the data satisfied the assumptions of normality (variables have a normal distribution), linearity (that is the relationship between dependent and independent variables are linear in nature), variable type (that is outcomes must be continuous, predictors can be continuous or dichotomous), and no multi-collinearity ( this exists when the IV's are highly correlated;  $r = 0.9$  (Tabachnik and Fidell, 1992 ).

The analysis of the longitudinal dataset broadly follows the Parkes (1990) and Parkes et al. (1994) procedure. In particular with respect to Parkes et al. (1994), the current analysis is using a longitudinal dataset, thus overcoming the limitations of cross sectional data that precludes causal interpretation of relations between job characteristics and outcome measures (Parkes et al., 1994). Parkes (1994) study II used longitudinal data from a homogeneous sample of student teachers were analysed to examine Time 2 somatic symptoms , controlling for Time 1 levels. Furthermore, Parkes et al. (1994) suggest such a context allows for more rigorous interpretation.

For each of the outcome measures at Time Two (Job Satisfaction, Work Aspiration, Work Competence, General mental health and Work Performance) in the First Stage of the HMRA the same outcome variable at Time One was entered. Thus controlling for these in each analysis. In the Second stage the demographic variables (Marital status and Number of years of service ) were entered. In the Third Stage, Time Two the moderator variables

(Neuroticism, Extraversion and Mastery) were entered. In the fourth Stage, the Time Two predictors for sources of stress (Uplifts and Hassles) were entered. In the Fifth Stage, the interactions between Time Two the sources of stress (Uplifts and Hassles) and the Time Two moderator variables (Neuroticism and Extraversion) were entered. In the Sixth Stage, the interaction between the Time Two sources of stress (Uplifts and Hassles) and the Time Two moderator variable Mastery was entered. In the Seventh Stage, the Time Two moderator variables Direct and Indirect coping were entered. In the Eighth Stage, the interaction between the Time Two sources of stress sub-scales and the Time Two moderator variable Direct coping was entered. Finally, in the last stage the interaction between the Time Two sources of stress sub-scales and Time Two the moderator variable Indirect coping was entered.

**7.5.1 Regression Analysis for Job Satisfaction**

Table 7.6 illustrates the contribution of each of the predictor variables toward the prediction of Job Satisfaction at Time 2. The results show a significant Main (Direct) effect of Uplifts, Hassles and a weaker significant contribution from Mastery. There were no significant interaction effects for any predictor variables. There were no significant main or interaction effects for Coping.

Overall, the final model was significant, ( $F= 12.95$ ,  $df\ 21, 76$ ,  $p<.001$ ) and the predictors explained 78.2% of variance in the Job Satisfaction scores at Time 2.



Table 7.6 Hierarchical Multiple Regression Analysis predicting Job Satisfaction at Time 2

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Job Satisfaction-T1	***.777	***.788	***.655	***.510	***.516	***.542	***.538	***.533	***.538
Marital status		-.002	.004	-.011	-.014	-.008	-.007	.004	.006
Service yrs		-.013	-.011	.003	.014	.020	.023	.011	.010
Neuroticism			*-.175	-.047	-.059	-.056	-.062	-.062	-.065
Extraversion			-.084	-.039	-.018	-.009	-.015	-.011	-.013
Mastery			**-.218	***-.220	**-.209	***-.225	**-.215	*-.178	*-.170
Uplifts				***.251	***.253	***.228	**219	**244	**249
Hassles				***.256	***.244	***-.242	***-.241	**-.214	**-.216
Neuroticism x Uplifts					.031	.066	.068	.058	.053
Neuroticism x Hassles					.033	.080	.069	.067	.072
Extraversion x Uplifts					-.022	-.020	-.020	-.013	-.012
Extraversion x Hassles					-.042	-.048	-.051	-.054	-.056
Mastery x Uplifts						-.057	-.065	-.122	-.122
Mastery x Hassles						-.063	-.051	-.048	-.048
Direct coping							.014	-.020	-.023
Indirect coping							-.034	-.050	-.049
Direct x Uplifts								-.145	-.149
Direct x Hassles								.006	.008
Indirect x Uplifts									-.001
Indirect x Hassles									-.025
R <sup>2</sup> change per stage	.604	.008	.084	.064	.007	.004	.001	.008	.000

Final model summary: R =.884, R<sup>2</sup> =.782, Adj R<sup>2</sup> =.721, F = 12.95, df 21, 76, p <.001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05

In Summary:

The results indicate that increased Uplifts and lower levels of Hassles are the most influential predictors of high Job Satisfaction. The weaker significant main effect suggested that Job Satisfaction was higher in those with higher levels of Mastery (Control). There were no moderating effects from any of the predictor variables on Job Satisfaction.

**7.5.2 Regression Analysis for Aspiration**

Table 7.7 illustrates the contribution of each of the predictor variables toward the prediction of Aspiration at Time 2.

The results show a strong significant Main (Direct) effect for Extraversion and a significant main effect for Uplifts. There is also a weaker significant contribution to the prediction of Aspiration from Marital status. There were also significant interaction effects that indicated that Neuroticism moderated the relationship between Hassles and Aspiration and Mastery moderated the relationship between Uplifts and Aspiration. There were no significant main or interaction effects for Coping.

Overall, the final model was significant, ( $F= 6.695$ ,  $df\ 21,80$ ,  $p<.001$ ) and the predictors explained 79.8% of variance in the Aspiration scores at Time 2.



Table 7.7 Hierarchical Multiple Regression Analysis predicting Aspiration at Time 2

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Aspiration-T1	***.550	***.544	***.457	***.351	***.371	***.388	***.383	***.394	***.369
Marital status		.022	.112	.117	*.157	*.173	*.175	*.170	*.171
Service yrs		-.078	.017	.048	.003	.007	.012	-.006	.004
Neuroticism			-.054	.077	.018	.011	.004	-.003	.012
Extraversion			***.312	***.373	***.305	***.315	***.311	**288	***.303
Mastery			-.077	-.060	-.109	-.154	-.144	-.111	-.136
Uplifts				***.334	***.320	**260	**250	**289	**273
Hassles				-.159	-.116	-.137	-.136	**-.110	-.103
Neuroticism x Uplifts					**-.259	-.150	-.146	-.145	-.128
Neuroticism x Hassles					.181	**316	**304	.305	*285
Extraversion x Uplifts					-.062	-.058	-.057	-.061	-.054
Extraversion x Hassles					.160	.156	.152	.161	.167
Mastery x Uplifts						-.179	-.189	*.234	*.237
Mastery x Hassles						-.168	-.155	-.180	-.184
Direct coping							.014	.048	.054
Indirect coping							-.044	-.060	-.062
Direct x Uplifts								.004	-.005
Direct x Hassles								-.117	-.113
Indirect x Uplifts									.040
Indirect x Hassles									.100
R <sup>2</sup> change per stage	.302	.009	.111	.083	.082	.037	.001	.005	.008

Final model summary: R = .798, R<sup>2</sup> = .637, Adj R<sup>2</sup> = .542, F = 6.695, df 21, 80, p < .001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05

## In Summary

The results indicate that high levels of Extraversion is the most influential predictor of high Aspiration. The significant main effect for Uplifts indicates that increased Uplifts is also an indication of higher Aspiration. The weaker significant main effect suggests that Aspiration was higher in those with partners. The interactions indicated that Neuroticism moderated the relationship between Hassles and Aspiration. Also, Mastery moderated the relationship between Uplifts and Aspiration.

With respect to the significant interaction between Neuroticism and Hassles in the prediction of Work Aspiration, the moderating effect suggested that for those scoring high on Neuroticism there was a significant correlation of  $r = -.451$  between Hassles and Aspiration. Whereas for those scoring low on Neuroticism there was a non-significant correlation of  $r = -.286$  between Hassles and Work Aspiration. This suggests that there is a relationship between Hassles and decreased Work Aspiration for those with high Neuroticism.

With respect to the significant interaction between Mastery and Uplifts in the prediction of Work Aspiration, the moderating effect indicated that for those scoring high on Mastery (low control) the correlation was  $r = .637$  between Uplifts and Work Aspiration. Whereas for those scoring low on Mastery (high control) the correlation was  $r = .150$  between Hassles and Work Aspiration. This suggests that there is a stronger relationship between Uplifts and increased Aspiration for those with low on Mastery (control), (as a high score on Mastery indicates low control). This is an unexpected finding and it is not clear why this would be.



### **7.5.3 Regression Analysis for Competence**

Table 7.8 illustrates the contribution of each of the predictor variables toward the prediction of Competence at Time 2.

The results show a significant Main (Direct) effect for Neuroticism and Uplifts in the prediction of Competence. There was also a significant interaction effect that indicated that Neuroticism moderated the relationship between Hassles and Competence. There were no significant main or interaction effects for Coping.

Overall, the final model was significant, ( $F= 4.443$ ,  $df\ 21,79$ ,  $p<.001$ ) and the predictors explained 73.6% of variance in Competence scores at Time 2.

Table 7.8 Hierarchical Multiple Regression Analysis predicting Competence at Time 2

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Competence-T1	***.557	***.570	***.478	***.442	***.479	***.481	***.480	***.484	***.475
Marital status		-.125	-.051	-.037	-.042	-.023	-.020	-.032	-.001
Service yrs		.088	*.182	.169	.170	.149	.157	.170	.173
Neuroticism			-.119	*-.252	*-.224	*-.237	*-.250	*-.249	*-.255
Extraversion			*.202	.154	.153	.156	.148	.143	.129
Mastery			-.034	-.069	-.094	-.089	-.068	-.101	-.072
Uplifts				**-.231	**-.239	**-.252	**-.274	**-.299	*-.254
Hassles				.144	.143	.126	.131	.103	.064
Neuroticism x Uplifts					-.050	.044	.051	.058	.030
Neuroticism x Hassles					*.246	*.259	.237	.240	*.286
Extraversion x Uplifts					.125	.123	.126	.118	.162
Extraversion x Hassles					.152	.165	.156	.160	.166
Mastery x Uplifts						-.168	-.191	-.133	-.137
Mastery x Hassles						.024	.051	.051	.039
Direct coping							.031	.052	.032
Indirect coping							-.080	-.072	-.067
Direct coping x Uplifts								.125	.069
Direct coping x Hassles								.003	.022
Indirect x Uplifts									.123
Indirect x Hassles									-.084
R <sup>2</sup> change per stage	.310	.045	.062	.046	.037	.014	.005	.007	.016

Final model summary: R = .736, R<sup>2</sup> = .541, Adj R<sup>2</sup> = .420, F = 4.443, df 21, 79, p < .001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05



**In Summary**

The results indicate that low levels of Neuroticism and low levels of Uplifts are the most influential predictors of high Competence. The latter finding was unexpected. The interaction indicated that Neuroticism moderated the relationship between Hassles and Competence.

With respect to the significant interaction between Neuroticism and Hassles in the prediction of Work Competence, the moderating effect indicated that for those scoring high on Neuroticism there was a non significant negative correlation ( $r = -.405$ ) between Hassles and Work Competence. Those scoring low on Neuroticism the correlation was also not significant ( $r = .261$ ) between Hassles and Work Competence. From these results it is not clear what the moderating effect is. However, there is a trend towards a relationship between Hassles and high Work Competence for those low in Neuroticism, but it is not possible to draw any conclusions as both correlations were not significant.

**7.5.4 Regression Analysis for General mental health**

Table 7.9 illustrates the contribution of each of the predictor variables toward the prediction of General mental health at Time 2.

The results show a strong significant Main (Direct) effect for Neuroticism and a weaker significant contribution to the prediction of General mental health from Hassles. There were no significant interaction effects for any of the predictor variables. There were no significant main or interaction effects for Coping.

Overall, the final model was significant, ( $F = 5.124$ ,  $df\ 21,76$ ,  $p < .001$ ) and the predictors explained 76.6% of variance in General mental health scores at Time 2.

Table 7.9 Hierarchical Multiple Regression Analysis predicting General mental health at Time 2

Predictors	Beta Stage 1	Beta Stage 2	Beta Stage 3	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
GenMentHealth-T1	***.459	***.454	***.202	***.156	***.130	***.130	***.130	***.132	***.167
Marital status		.125	.018	.037	.025	.023	.018	.017	-.025
Service yrs		.042	-.099	-.124	-.113	-.110	-.129	-.126	-.131
Neuroticism			***.572	***.511	***.491	***.492	***.513	***.513	***.521
Extraversion			-.145	*.173	-.152	-.153	-.148	-.146	-.129
Mastery			-.054	-.045	-.046	-.045	-.081	-.087	-.159
Uplifts				-.061	-.074	-.072	-.035	-.041	-.109
Hassles				*.177	*.206	*.208	*.200	*.194	*.239
Neuroticism x Uplifts					-.031	-.042	-.059	-.058	-.030
Neuroticism x Hassles					.022	.018	.057	.056	.011
Extraversion x Uplifts					.023	.023	.021	.020	-.022
Extraversion x Hassles					-.135	-.136	-.120	-.120	-.118
Mastery x Uplifts						.021	.052	.061	.071
Mastery x Hassles						.000	-.043	-.041	-.039
Direct coping							-.024	-.025	.005
Indirect coping							.132	.134	.128
Direct x Uplifts								.010	.070
Direct x Hassles								.013	.002
Indirect x Uplifts									-.139
Indirect x Hassles									.146
R <sup>2</sup> change per stage	.211	.025	.269	.023	.016	.000	.012	.000	.029

Final model summary: R =.766, R<sup>2</sup> =.586, Adj R<sup>2</sup> =.472, F = 5.124, df 21, 76, p <.001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05



## **In Summary**

The results indicate that high levels of Neuroticism is the most influential predictor of poor General mental health. The weaker significant main effect suggested that higher levels of Hassles also indicated poorer mental Health.

### **7.5.5 Regression Analysis for Work Performance**

Table 7.10 illustrates the contribution of each of the predictor variables toward the prediction of Work Performance at Time 2.

The results show a significant Main (Direct) effect for Neuroticism in the prediction of Work Performance. There was also a significant interaction effect that indicated that Mastery moderated the relationship between Hassles and Work Performance. There were no significant main or interaction effects for Coping.

Overall, the final model was significant, ( $F = 3.066$ ,  $df\ 21,81$ ,  $p < .001$ ) and the predictors explained 66.5% of variance in General mental health scores at Time 2.

Table 7.10 Hierarchical Multiple Regression Analysis predicting Work Performance at Time 2

Predictors	Beta Stage 1	Beta Stage 2	Beta 3	Beta Stage	Beta Stage 4	Beta Stage 5	Beta Stage 6	Beta Stage 7	Beta Stage 8	Beta Stage 9
Work Performance-T1	***.360	***.342	*.254	*.273	*.265	*.266	*.271	**.285	**.359	
Marital status		-.137	-.110	-.099	-.088	-.091	-.087	-.091	-.029	
Service yrs		.014	.068	.072	.064	.126	.133	.176	.186	
Gender		-.019	-.095	-.117	-.170	*.219	*.225	-.192	-.193	
Neuroticism			*.293	*.256	*.297	*.276	-.280	*.274	*.311	
Extraversion			-.034	-.019	-.008	.014	.017	.045	.004	
Mastery			-.060	-.022	.016	-.092	-.075	-.151	-.048	
Uplifts				.160	.185	.095	.082	-.010	.068	
Hassles				.030	.049	.030	.032	-.030	-.084	
Neuroticism x Uplifts					.054	.063	.073	.082	.035	
Neuroticism x Hassles					-.082	.156	.141	.147	.222	
Extraversion x Uplifts					-.183	-.183	-.184	-.183	-.123	
Extraversion x Hassles					-.084	-.134	-.140	-.150	-.153	
Mastery x Uplifts						.031	.021	.134	.093	
Mastery x Hassles						***.424	***.405	***.362	***.362	
Direct coping							-.005	-.034	-.064	
Indirect coping							-.052	-.016	-.011	
Direct x Uplifts								.125	.053	
Direct x Hassles								.179	.202	
Indirect x Uplifts									.174	
Indirect x Hassles									-.190	
R <sup>2</sup> change per stage	.129	.019	.084	.023	.033	.083	.002	.025	.045	

Final model summary: R =.665, R<sup>2</sup> =.443, Adj R<sup>2</sup> =.298, F = 3.066, df 21, 81, p <.001

\*\*\* p<0.001; \*\* p<0.01; \*p<0.05



## **In Summary**

The results indicate that high levels of Neuroticism is the most influential predictor of poor Work Performance. The interaction effect indicated that Mastery moderated the relationship between Hassles and Work Performance.

With respect to the significant interaction between Mastery and Hassles in the prediction of Work Performance, the moderating effect indicated that for those scoring high on Mastery there was a significant negative correlation between Hassles and Work Performance ( $r = -.642$ ). Whereas for those scoring low on Mastery the correlation ( $r = -.150$ ) between Hassles and Work Performance was non-significant. This suggests that there is a relationship between Hassles and low Work Performance for those with low Mastery, (as high Mastery score indicates low control).

### **7.5.6 SUMMARY**

The summary of the results of the analyses for the repeated measures longitudinal samples are shown in Table 7.11

Table 7.11 SUMMARY TABLE to illustrate the significant effects for the Longitudinal Data

<i>Outcome measure</i>	<i>Job Satisfaction</i>	<i>Aspiration</i>	<i>Competence</i>	<i>General mental health</i>	<i>Work Performance</i>
<i>Main effects of Uplifts and Hassles</i>	Uplifts and Hassles	Uplifts	Uplifts	Hassles	No Main effects
<i>Main effects of Individual differences and Coping</i>	Mastery	Extraversion, Marital status	Neuroticism	Neuroticism	Neuroticism
<i>Interaction effects</i>	No Interaction effects	Neuroticism moderated relationship between Hassles and Aspiration; Mastery moderated the relationship between Uplifts and Aspiration	Neuroticism moderated relationship between Hassles and Competence	No Interaction effects	Mastery moderated relationship between Hassles and Work Performance
<i>Rsquare</i>	R=0.884	R=0.798	R=0.736	R=0.766	R=0.665

The findings for the various Outcomes measures are summarised below.



#### **7.5.6.1 Hypothesis 1: Hassles and Uplifts will have a main effect on Outcome variables**

The results indicate that work Uplifts was a significant main effect contributor to the prediction of Job Satisfaction, Work Aspiration and Work Competence. That is increased Uplifts is predictive of greater Job Satisfaction and higher Aspiration but unexpectedly, lower levels of Competence. However, Uplifts was not shown to be a significant predictor of General mental health and Work Performance. With respect to work Hassles, it was found to be a significant main contributor to Job Satisfaction and General mental health. That is lower Hassles was predictive of greater Job Satisfaction and higher levels of Hassles indicated poorer General mental health. However, Hassles was not shown to be a significant predictor of Work Competence or Aspiration nor Work Performance.

#### **7.5.6.2 Hypothesis 2: Individual differences and Coping strategies will have a main effect on outcome measures.**

(For e.g. Parkes (1990)-suggests there is a main effect for Neuroticism and Coping on GHQ).

Neuroticism was found to be a significant main effect predictor of Work Aspiration, General mental health and Work Performance. That is, low levels of Neuroticism were predictive of greater Work Aspiration, better General mental health and better Work Performance. However, Neuroticism was not found to predict Job Satisfaction or Work Competence. Extraversion was found only to be a significant main effect predictor of Work Aspiration; that is, high levels Extraversion were predictive of greater Work Aspiration. But Extraversion was not found to predict Job Satisfaction, Work Competence, General mental health, nor Work Performance. Work-related control (i.e. Mastery) was found to be a significant predictor of Job Satisfaction; that is, increased Mastery was predictive of greater Job Satisfaction. However, Mastery was not predictive of Work Aspiration, Work Competence, General mental health and Work Performance.

Coping had no significant main effects with any of the Outcome measures.

**7.5.6.3 Hypothesis 3: The relationship between Uplifts and Hassles and Outcome measures will be moderated by Individual differences and Coping strategies (For e.g. Parkes (1990) suggests Main and Moderator effects for Neuroticism and Coping).**

With respect to moderating effects, there were no moderating effects from any of the predictor variables on Job Satisfaction and General mental health. However, Neuroticism moderated the relationship between Hassles and Aspiration, which indicated that there is a stronger relationship between Hassles and decreased job Aspiration for those with high Neuroticism. Additionally, Neuroticism moderated the relationship between Hassles and Competence, however from the results it is not clear what the moderating effect is but there is a trend towards a relationship between Hassles and high Work Competence for those low in Neuroticism, but it is not possible to draw any conclusions as both correlations were not significant. Mastery moderated the relationship between Uplifts and Aspiration suggesting that there is a stronger relationship between Uplifts and increased Aspiration for those low in Mastery, this is an unexpected finding and it is not clear why this would be. Mastery moderated the relationship between Hassles and Work Performance, which indicated there is a relationship between Hassles and low Work Performance for those scoring low on Mastery. There were no moderating effects from Coping Strategies for any of the outcome measures again.

These findings will be discussed in chapter nine.

The next section will address the Path analyses.

For the current research a series of Path Analyses were conducted on the outcome measures of Job Satisfaction, Aspiration, Competence, General mental health and Work Performance for both the cross sectional and longitudinal datasets in order to answer Hypothesis four and to answer Hypothesis five the longitudinal dataset was only used.

Please refer to Methodology Chapter Five (sections 5.4 and 5.4.1) for the Background to Path Analysis and the Path Analysis procedure respectively.





7.6 PATH MODELS FOR THE CROSS SECTIONAL DATA

7.6.1 JOB SATISFACTION

Figure 7.1 Path Model for Job Satisfaction for the Cross Sectional data

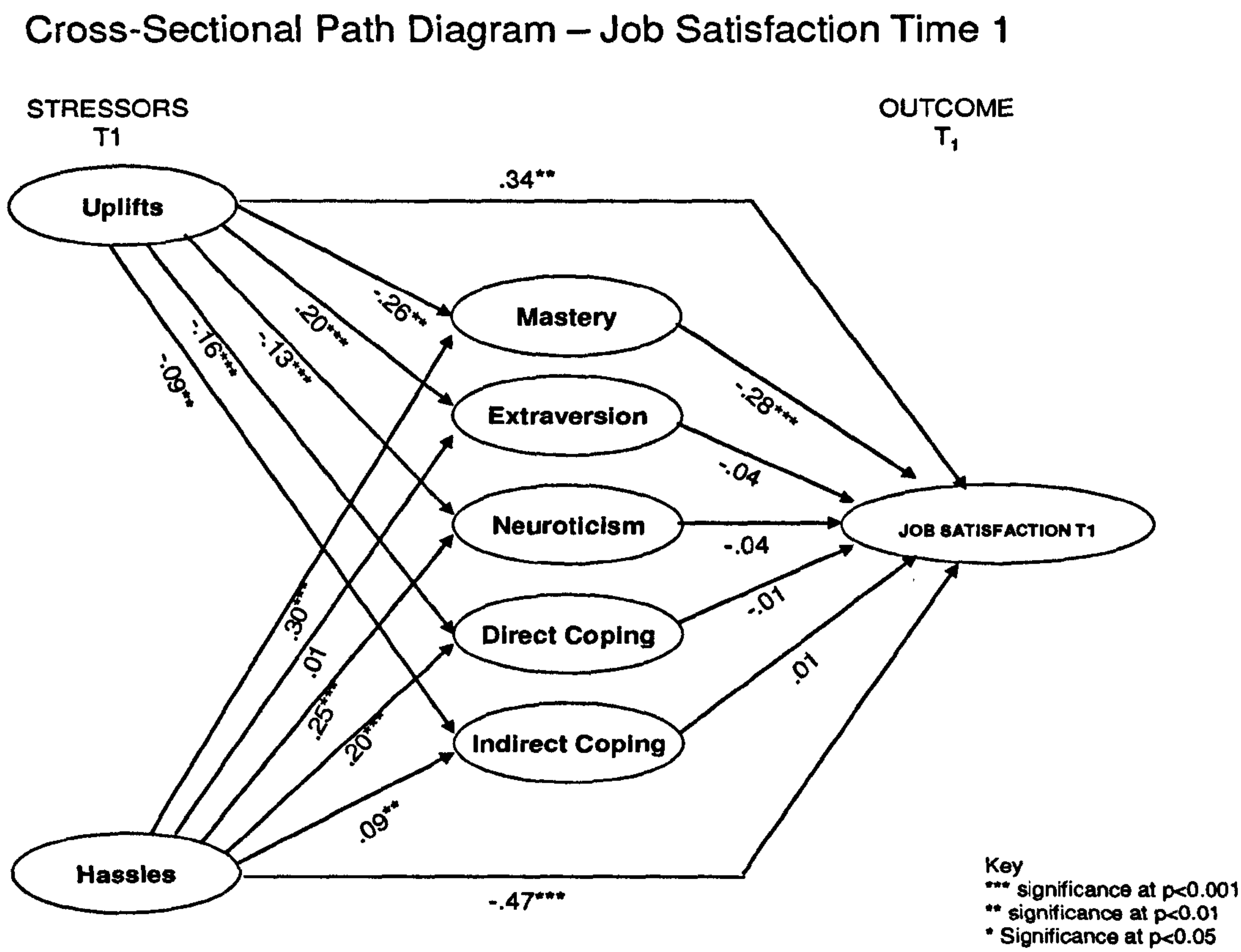


Figure 7.1 illustrates the Path Model for Job Satisfaction for the cross sectional data. The significant Direct and Indirect effects are described.

Direct Effects

The model paths indicate very strong significant direct influences of Hassles and a strong significant direct effect of Uplifts on Job Satisfaction. Additionally, Mastery also shows a strong significant influence on Job Satisfaction.



Indirect Effects

The model paths indicate there are no significant indirect paths for Job Satisfaction.

Taken together the paths emphasize that Hassles has a direct influence on Job Satisfaction as do Uplifts and Mastery. This would mean that high scores on Uplifts, low scores on Hassles and high scores on Mastery would directly predict better Job Satisfaction.

7.6.2 ASPIRATION

Figure 7.2 Path Model for Aspiration for the Cross Sectional data

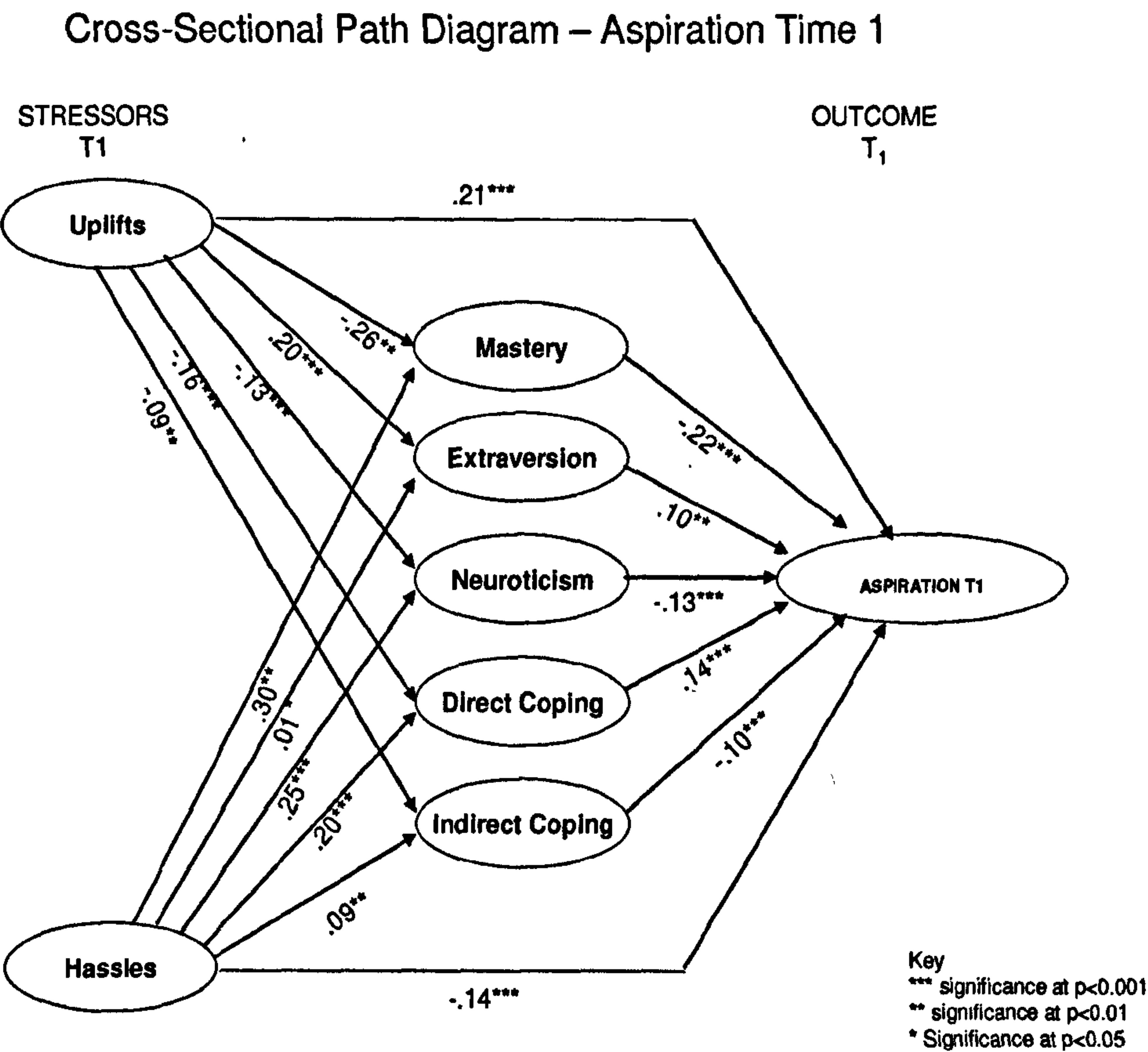


Figure 7.2: Path Model for Aspiration for the cross sectional data. The significant Direct and Indirect effects are described below.

### **Direct Effects**

The model paths indicate a strong significant direct influence of Uplifts and a weaker but significant direct effect of Hassles on Aspiration. Additionally, Mastery shows a strong significant influence on Aspiration (with significant but weaker influences from Direct coping, Neuroticism, Extraversion and Indirect coping).

### **Indirect Effects**

The model paths indicate there are no significant indirect influences for Aspiration.

Taken together the paths emphasize the importance of Uplifts, Hassles and Mastery directly to Aspiration, but not indirectly. This would mean that high scores on Uplifts and low scores on Hassles directly predict better Aspiration, as do high scores on Mastery, Direct coping and Extraversion and low scores on Indirect coping and Neuroticism.



7.6.3 COMPETENCE

Figure 7.3 Path Model for Competence for the Cross Sectional sample

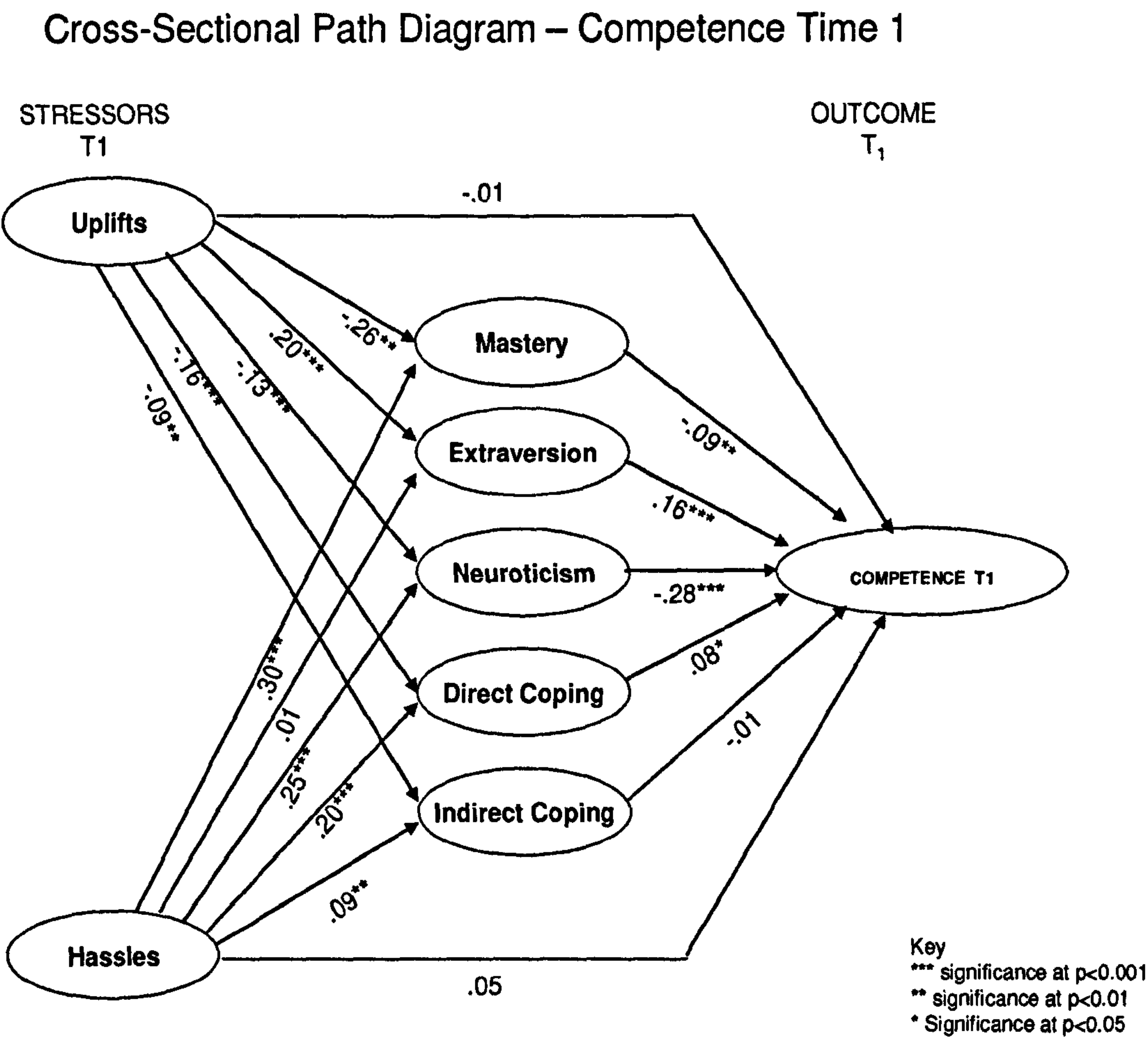


Figure 7.3 Path Model for Competence for the Cross sectional data. The significant Direct and Indirect effects are described.

Direct Effects

The model paths indicate there are no significant direct influences of Uplifts nor Hassles on Competence. However, Neuroticism has a strong influence and Extraversion has a weaker but significant influence on Competence, as do Mastery and Direct coping.

### **Indirect Effects**

The model paths indicate that there are no significant indirect effects on Competence.

Taken together the paths emphasize that there are no important direct paths from Uplifts and Hassles but there are direct paths from Neuroticism (and weaker significant direct paths from Extraversion, Mastery and Direct coping). This means that high scores on Mastery (low control), Direct coping and Extraversion and low scores on Neuroticism predict Competence.



7.6.4 GENERAL MENTAL HEALTH

Figure 7.4 Path Model for General mental health for the Cross Sectional data

Cross-Sectional Path Diagram – General Mental Health Time 1

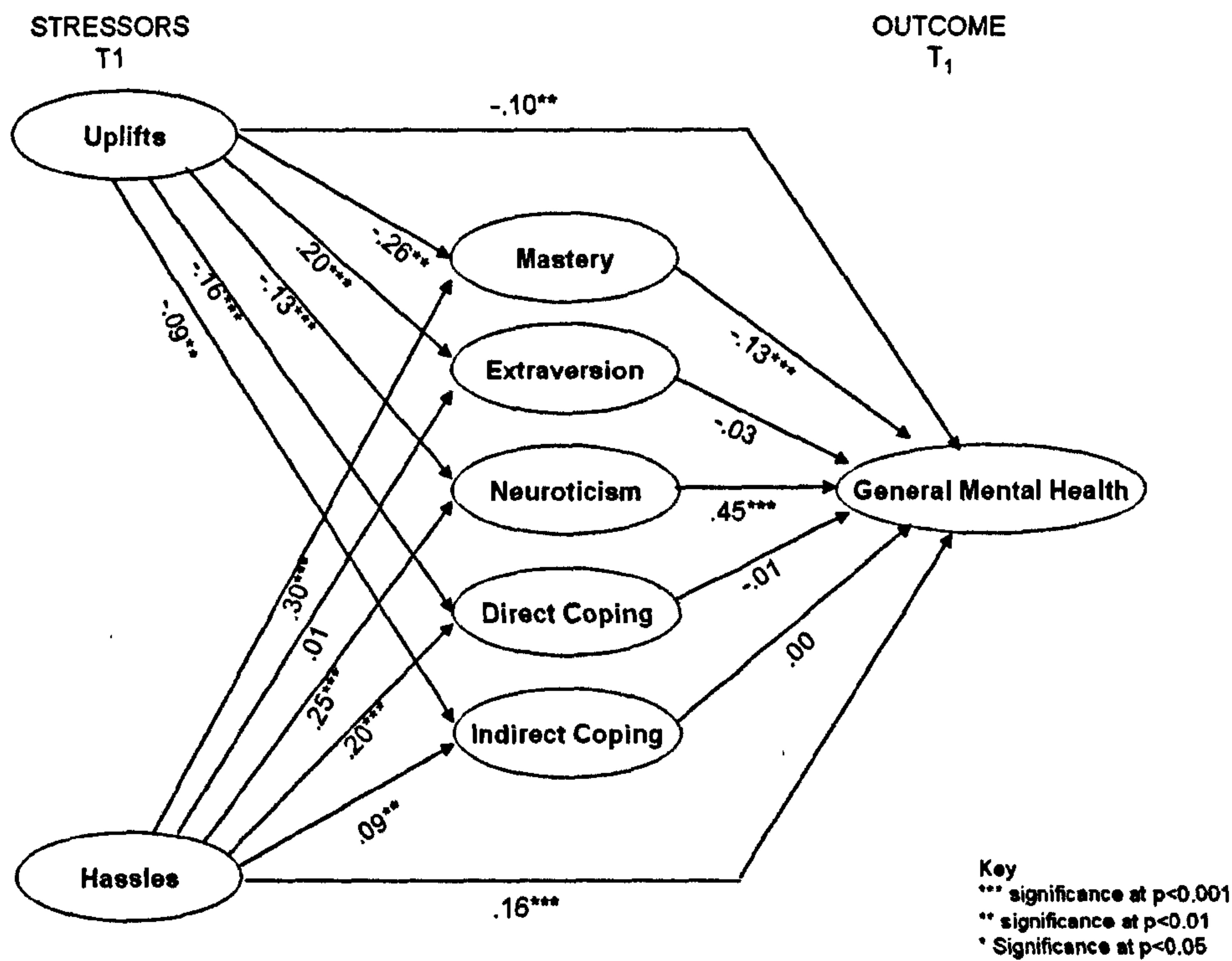


Figure 7.4 illustrates the Path Model for General mental health for the cross sectional sample. The significant Direct and Indirect effects are described below.

Direct Effects

The model paths indicate significant direct influences of Hassles and Uplifts on General mental health. Additionally, Neuroticism is shown to have a strong significant influence on General mental health (with a weaker significant contribution from Mastery).

Indirect Effects

The model paths indicate that only Hassles has a significant indirect effect via Neuroticism on General mental health.

Taken together the paths emphasize that Hassles has an influence directly as well as indirectly through Neuroticism on General mental health, but that the relationship between Hassles and General mental health is partially mediated through Neuroticism. Also, high scores on Mastery (low control) predict poorer General mental health.

7.6.5 WORK PERFORMANCE

Figure 7.5 Path Model for Work Performance for the Cross Sectional sample.

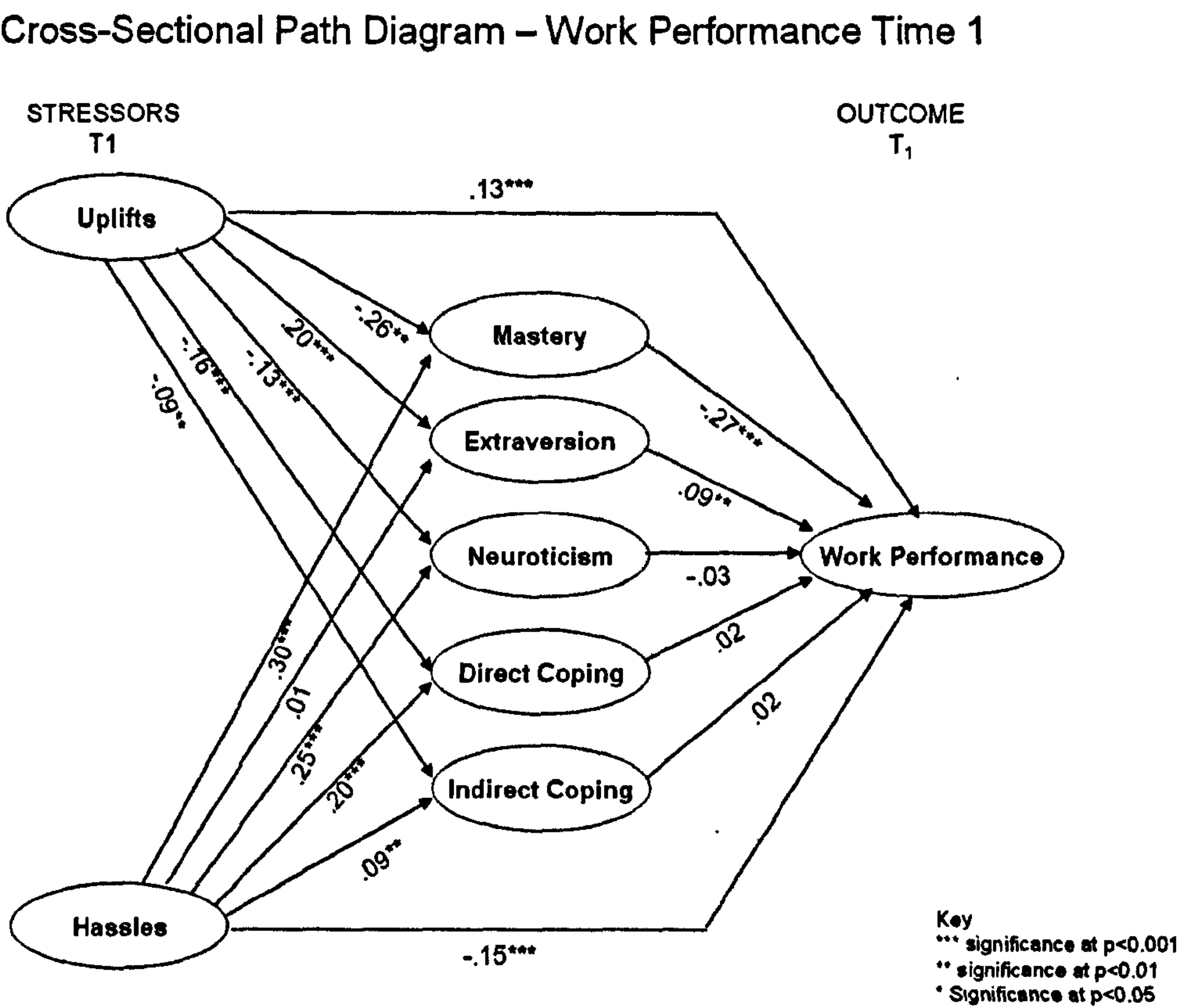


Figure 7.5 illustrates the Path Model for Work Performance for the Cross sectional sample. The significant Direct and Indirect effects are described.



### **Direct Effects**

The model paths indicate significant direct influence of Uplifts and Hassles on Work Performance. Additionally, Mastery also has a strong significant influences on Work Performance, whereas Extraversion has a weaker direct effect.

### **Indirect Effects**

The model paths indicate that Hassles has a significant indirect effect via Mastery.

Taken together the paths emphasize the importance of Hassles directly as well as indirectly through Mastery, i.e. that Mastery may be a partial mediator of the relationship between Hassles and Work Performance. Also high scores on Extraversion predict better Work Performance.

7.7 LONGITUDINAL PATH MODELS:

7.7.1 JOB SATISFACTION

Figure 7.6 Path Model for Job Satisfaction for the Longitudinal sample.

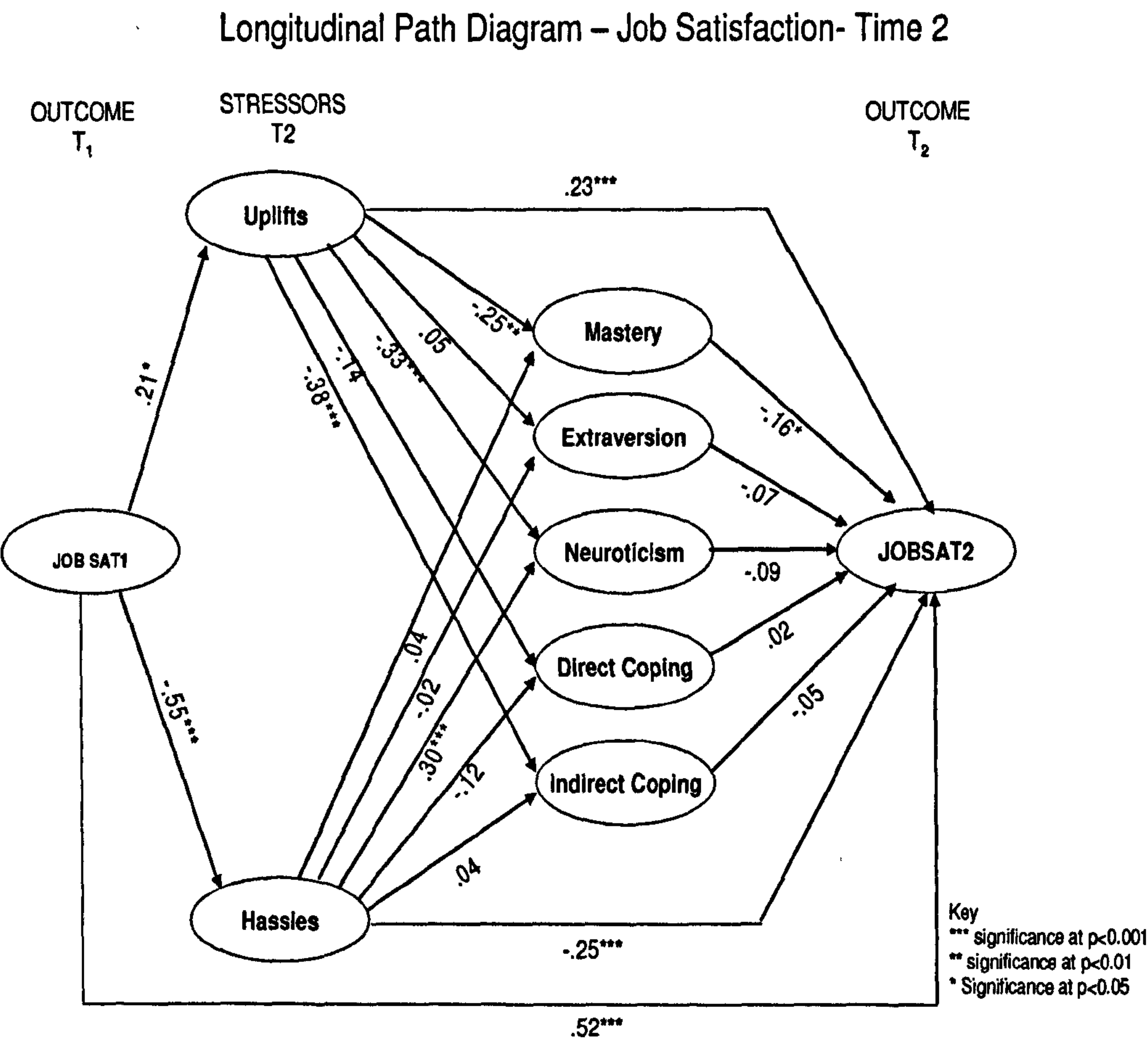


Figure 7.6 illustrates the Path Model for Job Satisfaction for the Longitudinal sample. The significant Direct and Indirect effects are described.

Direct Effects

The model paths indicate a strong significant direct influence of Job Satisfaction at Time One on Job Satisfaction at Time Two. Additionally, a strong significant direct influences of



Hassles and Uplifts and a weaker but significant influence of Mastery on Job Satisfaction at Time Two. Additionally, Job Satisfaction at Time One has a strong significant direct influence on Hassles at Time Two and a weaker significant effect of Uplifts at Time Two.

### **Indirect Effects**

The model paths indicate that Job Satisfaction at Time Two does not have significant indirect paths.

Overall, people with high Uplifts and low Hassles have good Job Satisfaction also there is consistency over time, people who are satisfied with their job at Time One are also satisfied with their job at Time Two.

7.7.2 ASPIRATION

Figure 7.7 Path Model for Aspiration for the Longitudinal sample.

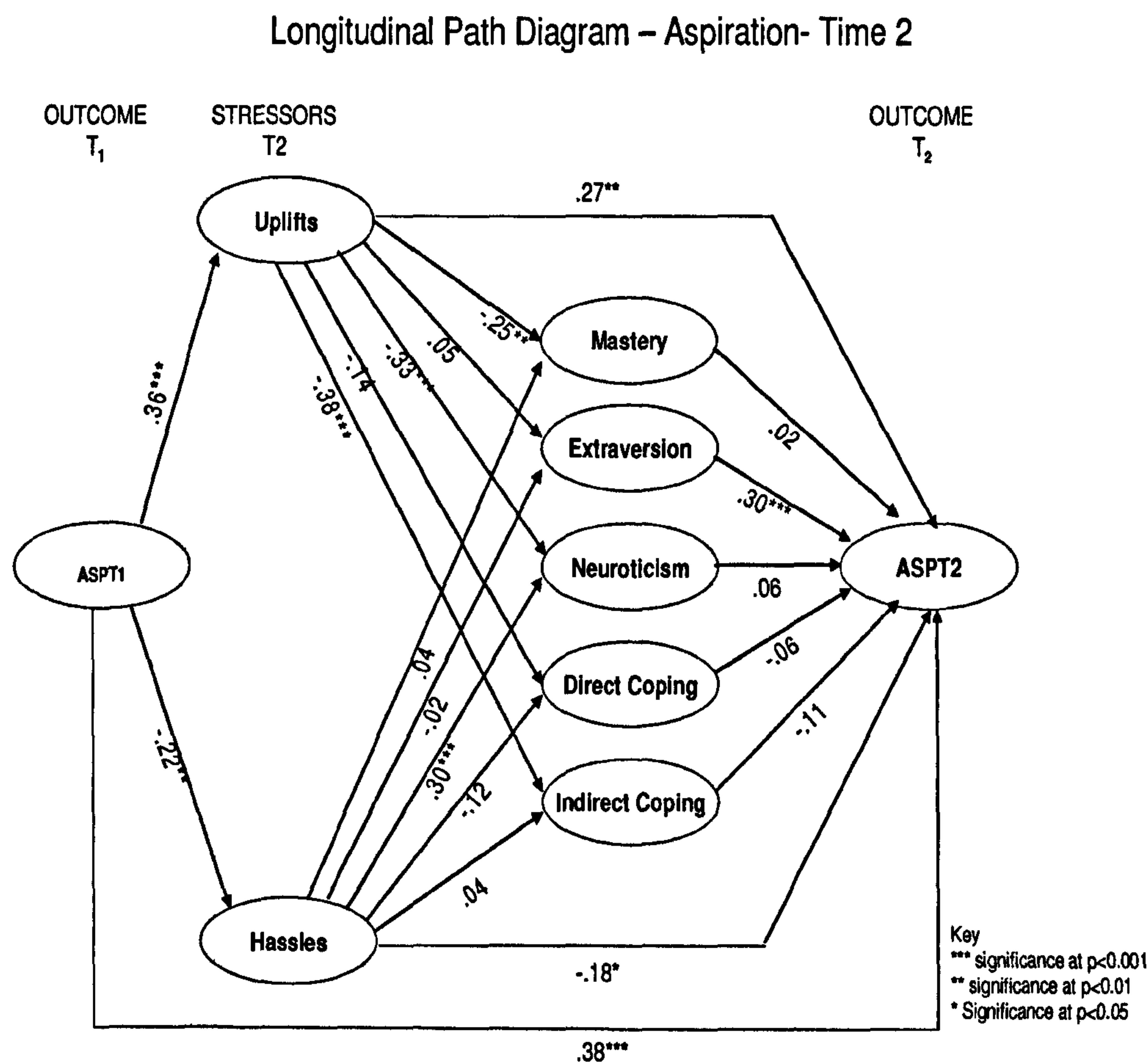


Figure 7.7 illustrates the Path Model for Aspiration for the Longitudinal sample. The significant Direct and Indirect effects are described.

Direct Effects

The model paths indicates a strong significant direct influence of Aspiration at Time One on Aspiration at Time Two. Additionally, strong significant direct influences of Uplifts and Extraversion on Aspiration at Time Two, and a weaker but significant influence of Hassles



on Aspiration at Time Two. Additionally, Aspiration at Time One has a strong significant direct influence on Uplifts at Time Two and a weaker significant effect on Hassles at Time Two.

Indirect Effects

The model paths indicate that Aspiration at Time Two has no significant indirect influences.

Overall, people with high Uplifts, low Hassles and high Extraversion have good Aspiration with respect to their jobs. Also, there is consistency over time; people who aspire within their jobs at Time One also aspire within their jobs at Time Two.

7.7.3 COMPETENCE

Figure 7.8 Path Model for Competence for the Longitudinal sample

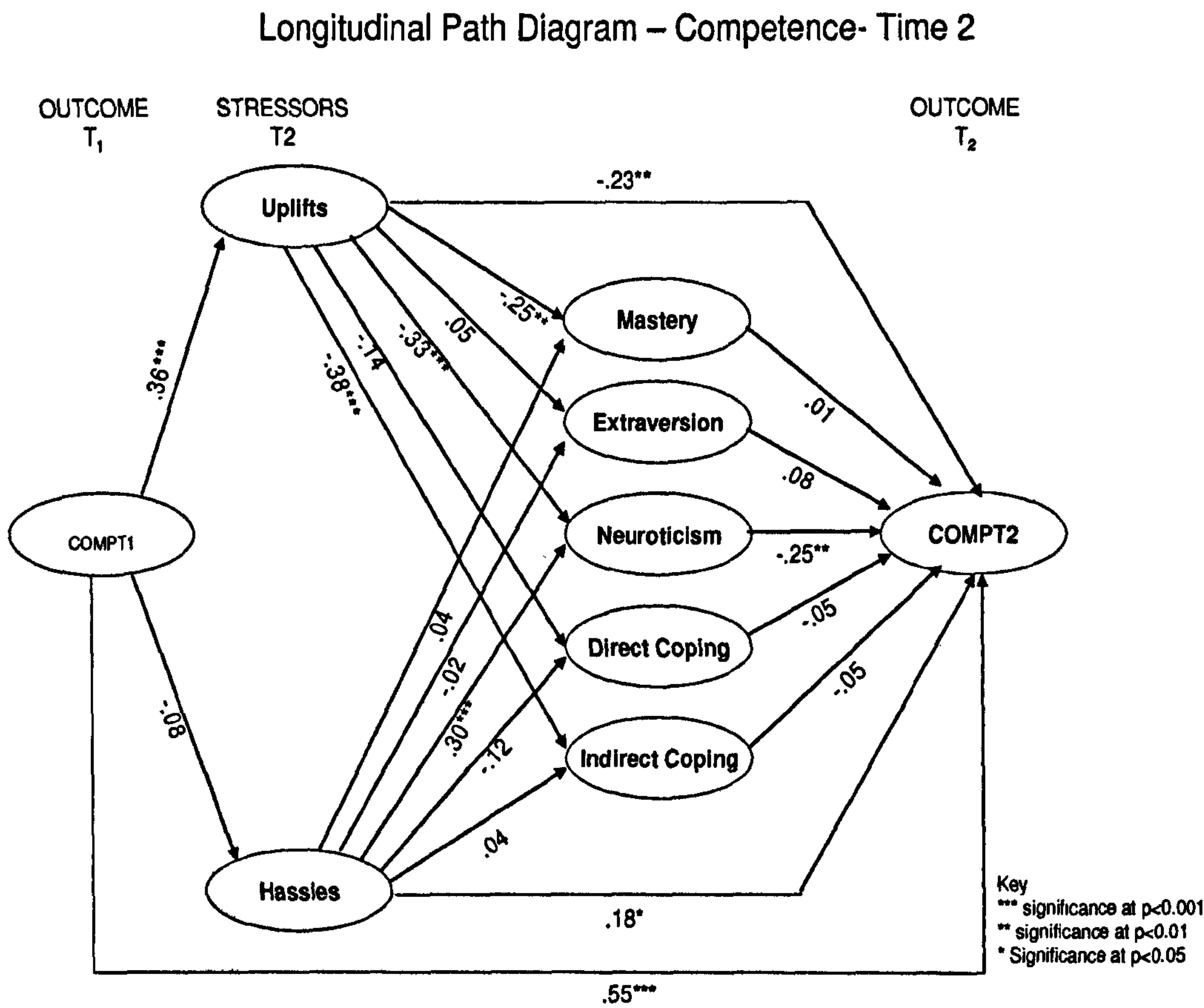


Figure 7.8 Path Model for Competence for the Longitudinal sample. The significant Direct and Indirect effects are described.

### **Direct Effects**

The model paths indicate a strong significant direct influence of Competence at Time One on Competence at Time Two. Additionally, strong significant direct influences of Uplifts and Neuroticism on Competence at Time Two and a weaker but significant influence of Hassles on Competence at Time Two. Also, Competence at Time One has a strong significant direct influence on Uplifts at Time Two but not on Hassles at Time Two.

### **Indirect Effects**

The model paths indicate that there are no significant indirect paths to Competence at Time Two.

Overall, people with low Uplifts, low Neuroticism and high Hassles have good Work Competence, this is an unexpected finding and it is not clear why this could be. Also, people with high Work Competence at time one have high Uplifts at Time Two. There is consistency over time with respect to people who have high Competence at time one, as they also have high Competence at Time Two with regards to their job.



7.7.4 GENERAL MENTAL HEALTH

Figure 7.9 Path Model for General mental health for the Longitudinal sample.

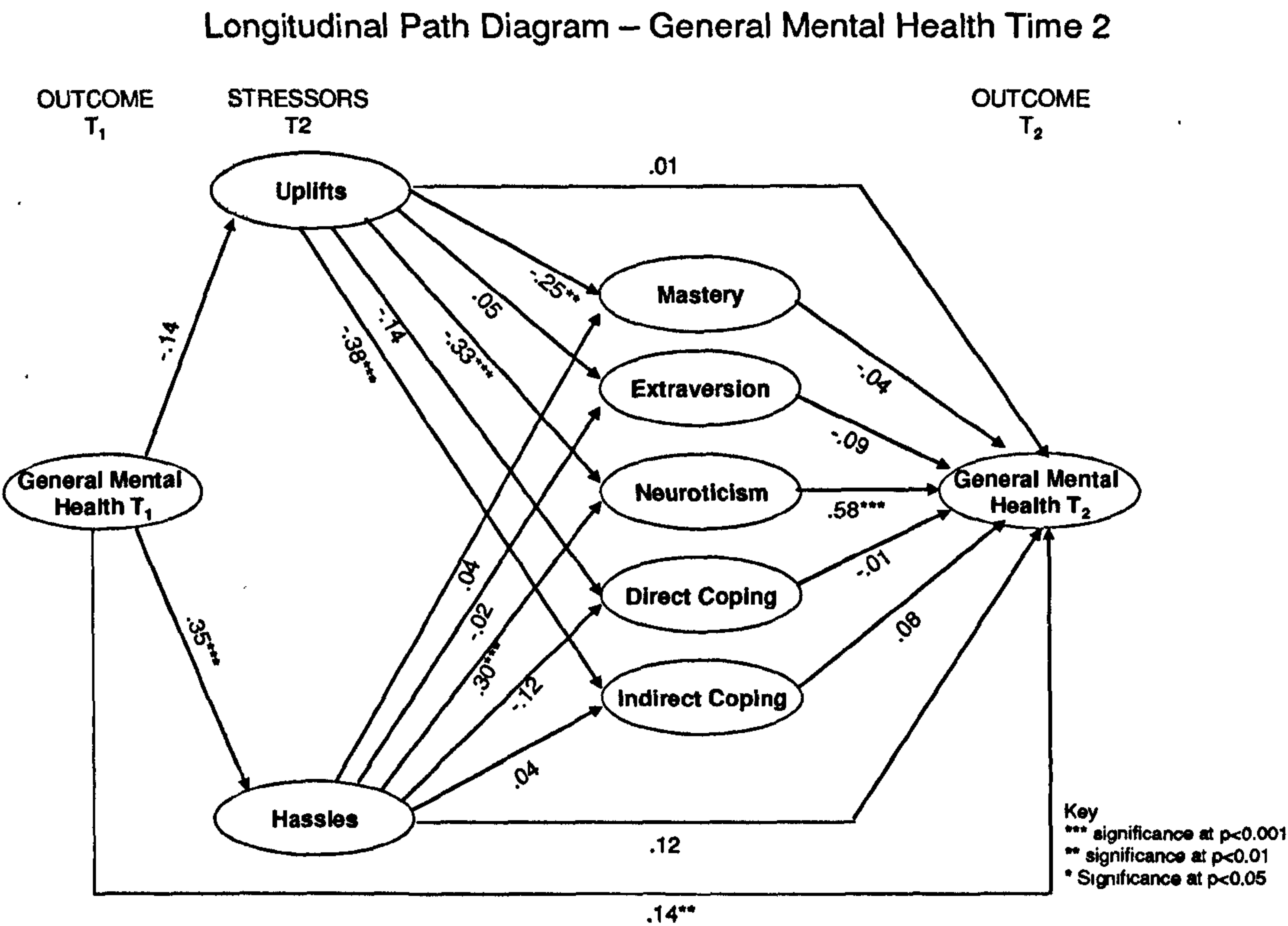


Figure 7.9 illustrates the Path Model for General mental health for the Longitudinal sample. The significant Direct and Indirect effects are described.

Direct Effects

The model paths indicate a significant direct influence of General mental health at Time One on General mental health at Time Two. Additionally, a strong significant direct influence from Neuroticism on General mental health at Time Two. Also, General mental health at Time One has a strong significant direct effect on Hassles at Time Two.

Indirect Effects

The model paths indicate that Uplifts and Hassles have strong indirect effects via Neuroticism on General mental health at Time Two. These relationships are fully mediated.

Overall, people with high Neuroticism have poor General mental health. Additionally, there is a mediating effect from both Uplifts and Hassles at Time Two on General mental health at Time Two through Neuroticism. There is also consistency overtime in that people with poor General mental health at time one also have poor General mental health at Time Two.

7.7.5 WORK PERFORMANCE

Figure 7.10 Path Model for Work Performance for the Longitudinal sample.

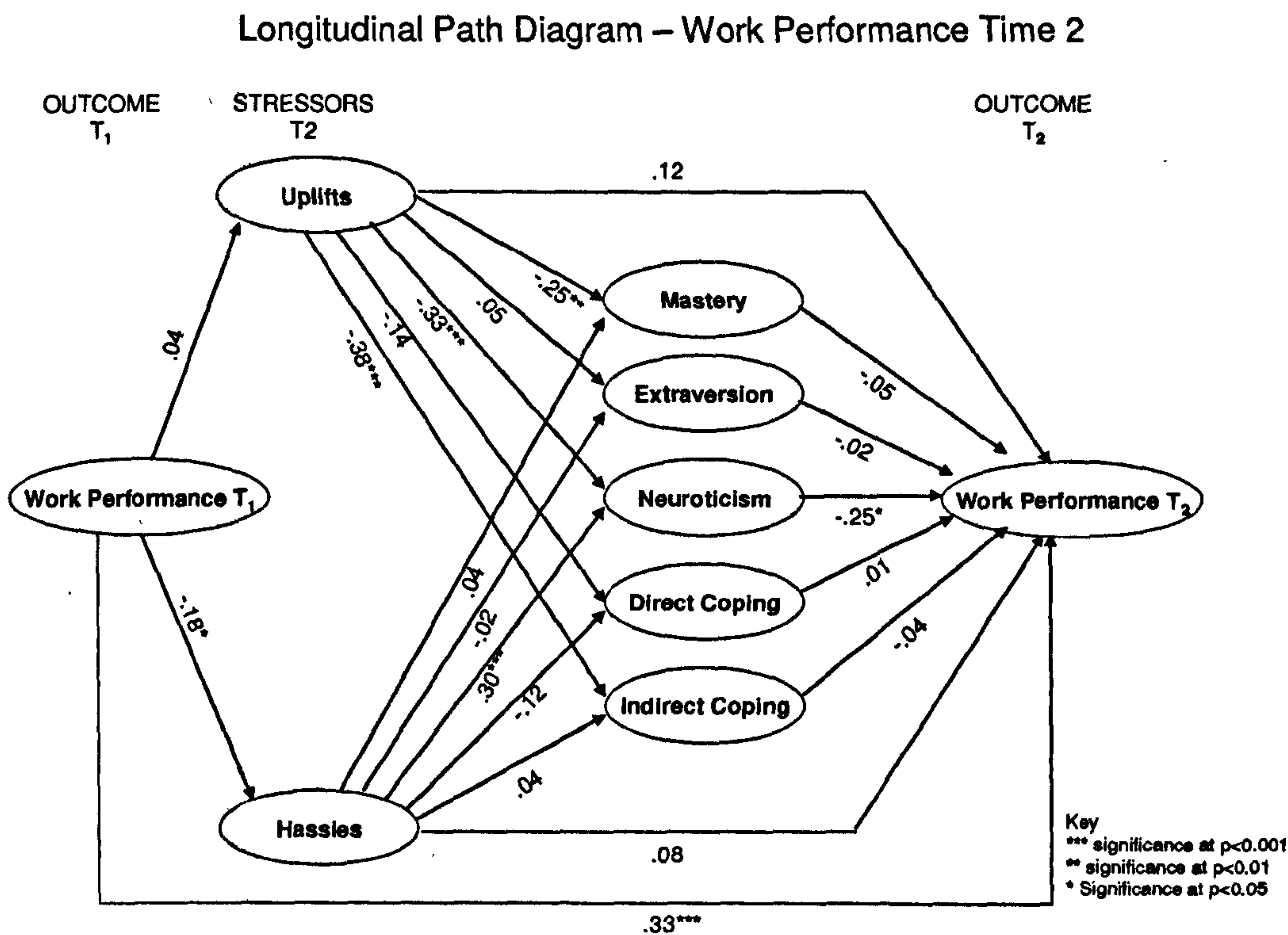


Figure 7.10 illustrates the Path Model for Work Performance for the Longitudinal sample.



The significant Direct and Indirect effects are described .

### **Direct Effects**

The model paths indicate a strong significant direct influence of Work Performance at Time One on Work Performance at Time Two. Also, a strong significant direct effect of Neuroticism on Work Performance at Time Two and Work Performance at Time One has a direct influence on Hassles at Time Two.

### **Indirect Effects**

The model paths indicate that there are no significant indirect paths to Work Performance at Time Two.

Overall, people with low Neuroticism have good Work Performance. Additionally there is also consistency over time in that people with good Work Performance at Time One have good Work Performance at Time Two, also people with good Work Performance at Time One have low Hassles at Time Two.

## **7.8 SUMMARY OF RESULTS FOR THE PATH ANALYSES WITH RESPECT TO HYPOTHESES FOUR AND FIVE:**

### **7.8.1 Hypothesis Four**

**Individual differences and Coping will have a mediating influence on the relationship between Hassles, Uplifts and each of the Outcome measures**

#### **Cross sectional data**

An overall observation is that for the cross sectional sample the path models indicate that for the outcome measures, Hassles has direct paths to all outcome measures except Competence. Uplifts has direct paths to all outcome measures except Competence and General mental health. Mastery has direct paths to all outcome measures except Competence. Thus, Competence has no direct paths from Uplifts, Hassles or Mastery.

Neuroticism and Extraversion have direct paths to both Competence and Aspiration and General mental health also has a direct path from Neuroticism and Work Performance from Extraversion.

With regards to Coping, only Aspiration had weak significant paths from Indirect coping but Aspiration and Competence had weak significant paths from Direct coping.

With regards the indirect paths, there were only two significant paths. Hassles had an indirect path via Neuroticism on General mental health At Time Two. In addition, Hassles had an indirect path via Mastery on Work Performance at Time Two. In both cases, this was only partial mediation as Hassles also had a direct path to both outcomes.

### **Longitudinal data**

For the longitudinal sample, the Time Two outcome measures Job Satisfaction, Aspiration and Competence have direct 'causal' paths from both Uplifts and Hassles. With regards the dispositional characteristics, Neuroticism had direct 'causal' paths to Competence, General mental health and Work Performance, whereas Extraversion only had a direct 'causal' path to Aspiration at Time Two. However, Mastery only had a direct 'causal' path to Job Satisfaction at Time Two.

There were no direct 'causal' paths from Coping on any of the outcome measures.

With respect to the indirect 'causal' paths, only General mental health had two significant indirect causal paths. General mental health at Time Two had indirect paths from both Uplifts and Hassles via Neuroticism. These were fully mediated i.e. Hassles and Uplifts did not have a direct effect on General mental health.



### **7.8.2 Hypothesis Five**

**Time One Outcome measure will have an influence on the prediction models at Time Two (For example; Daniels and Guppy; 1997, suggest Time One Outcome measure influences Time Two Predictors).**

Hypothesis Five is with reference to Path Models in Figures 7.6-7.10.

The Path models indicate that all the outcome measures at Time One ( Job Satisfaction, Aspiration, Competence, General mental health and Work Performance) have direct ‘causal’ paths to the equivalent Outcome measures at Time Two, although this path is weaker for General mental health.

Additionally, the Path models indicate there are direct ‘causal’ paths from Time One outcomes to Time Two Hassles (except Competence) and Time Two Uplifts (except for General mental health and Work Performance).

With regards indirect ‘causal’ paths there were no significant paths from Time One outcome measures to Time Two Outcome measures.

Overall, the conclusion from the analyses of the Hierarchical Multiple Regressions and Path Analyses suggests that the proposed model of stress may fit better as a direct and main effect model than a mediating or moderating model of stress. The only possible exception may be when predicting General mental health, where there was evidence of mediation via Neuroticism.

# **8**

## **CHAPTER EIGHT**

### **QUALITATIVE RESEARCH**

#### **8.1 OVERVIEW OF CHAPTER EIGHT**

Despite the large amount of research in the area of work stress, there is little knowledge of organisations or employees' views of work place stress and stress interventions (Levi, 1999). Cooper et al. (2001) propose that little qualitative research exists within the area of workplace stress and such research would add valuable knowledge to this area. The research reported in chapters' five to seven employed quantitative methodology. However, the use of mixed methods will allow deeper exploration of work stress in fire service personnel, so this chapter reports the methodology and findings of a qualitative research study. The chapter begins by critically discussing some studies that have addressed Occupational stress using some of these qualitative methods.

#### **8.2 RESEARCH IN OCCUPATIONAL STRESS USING QUALITATIVE METHODS**

Gyllensten, Palmer and Farrants (2005) researched attitudes of finance organisations towards workplace stress and stress interventions. They used semi-structured interviews, with seven individuals, each representing their organisation. The participants were initially contacted by letter and telephone, and told they would be informed about stress in their organisation. Interpretative Phenomenological Analysis (IPA) was used for data analysis, as it enabled exploration of the insider views of the participants. Interpretative Phenomenological Analysis (IPA) uses purposive sampling, that is, a group of participants who are informed about the research question (Chapman and Smith, 2002).



In IPA it is assumed there is an association between what the participants say and what they think, thus it seeks to capture the meaning of the participants' accounts, and this is done through a process of interpretative analysis (Duncan, 2001). An additional benefit of IPA is that it facilitates the discovery of rare themes within the area of investigation (Shaw, 2001). Three themes and various sub themes were identified within Gyllensten et al.'s research. An example of one of the themes is 'resistance to counselling for stress' and sub themes within this were negative perceptions, confidentiality issues, best remedy, last resort and coaching. Although the study resulted in a great amount of data being generated and a model for 'resistance to counselling for stress', the authors highlight the limitations of their study. That is, it was only one individual from each organisation that was interviewed and therefore, only one individual's view of the organisation was portrayed in the study. Additionally, they would have preferred it if the sample had been more homogeneous, as the sizes of the organisation varied from 150-10,000 employees (in the UK). Furthermore, they suggest that as analysis is a highly selective process, another researcher may have conducted a different analysis of the data. They state that this is a common critique of qualitative studies; they reflect the researchers' own opinions and biases (Baker, Pistrang and Elliot, 1994). Finally, not all parts of the analysis were checked by other researchers, and it has not been subject to the application of any other research method. Taking all these factors into consideration, they conclude that the study may highlight perceptions of stress within similar organisations but extensive generalizations based on their findings should not be made.

Chang and Lu (2007) addressed prevalent characteristics of organisational culture (OC) and common sources of work stress in a Taiwanese work context. Their study aimed to analyse how characteristics of OC may be linked to stressors, using focus group discussions. The study consisted of forty seven people, divided into eight focus groups, (each with 5-7 participants). The results indicated four characteristics of OC: family-kin, informal work and obligations, organisational loyalty and sub group involvement. The common sources of stress that were identified were: job characteristics, home-work interface, interpersonal relationships and career development. Data analysis was conducted using Content Analysis. This showed that characteristics of OC could either

alleviate or aggravate stress, depending on the employees' perception and attribution. Chang and Lu also performed 'Double-coding' analysis to help clarify the associations linking OC and stressors. Double coding (Bardin, 1977) entails counting simultaneous presence of occurrence in two different themes appearing in a corpus and so permits analysis of how themes are linked in a discourse (c.f Chang and Lu, 2007, p.555) They found that stressors related to job characteristics were particularly linked to informal work obligation but not to organisational loyalty as characteristics of OC. They suggest that results have both theoretical and practical implications, but that western findings regarding OC may not generalise completely to another culture, and the Taiwanese have distinct features of OC and work stressors. The authors note that exclusive reliance on qualitative methodology is a limitation of the study and it would have benefited from a quantitative perspective also.

A study by Clarkson and Hodgkinson (2007) aimed to demonstrate the efficacy of the qualitative occupational stress diary as a way to gain additional depth of insight into the way people experience stress, to foster individual reflection and self assessment, and as an aid to the development of context sensitive interventions. The research entailed 15 clerical workers, employed in a higher education organisation, using a free response format to complete a critical incident diary, over five consecutive working days. According to Clarkson and Hodgkinson, the findings indicated that the diary facilitated self-reflection and was reported to have cathartic value. They suggest that the factors constituting the causes and consequences of occupational stress were cognitively framed differently from one day to the next and that it was unlikely that these insights would have been attained had they employed a series of preformed quantitative response scales. However, there were limitations of the study. Despite assurance of confidentiality and anonymity, issues of a sensitive nature were under-reported (Orne, 1962). Thus the authors found that participants were not willing to admit to deterioration in job performance. In addition, there was negligible data reported regarding the personal and organisational consequences of stress and the study entailed only a five day diary period. Despite these limitations, the authors state that a qualitative occupational stress diary is a



simple, flexible and potentially a powerful instrument that could be used to compliment traditional methods of research and for intervention purposes.

A study by Iwasaki, MacKay and Ristock (2004) explored the experiences of stress among both female and male managers, using a series of single sex and mixed sex focus groups. According to the authors, there were substantial similarities between female and male participants' descriptions about their experience of stress (e.g. negative and positive aspects of stress, different levels of stress, lack of sleep, pressure, financial stressors, being a manager). However a number of important gender differences were noted. The authors explained these by the way in which gender continues to be socially constructed in society, specifically with respect to differing gender role expectations and responsibilities for women and men. Female managers experienced 'emotional stress', mainly because of the pressure to meet expectations of being responsible and caring for people both inside and outside of their home. In contrast, male managers tended to focus on themselves and regard other things as beyond their control and responsibility.

Other researchers such as Cooper et al. (2001) also support the use and value of using qualitative methods. After reviewing decades of work stress research, they questioned 'how appropriate are current methodologies?' (Cooper et al., 2001, p22; c.f. Chang and Lu, 2007). Cooper et al. observed that the bulk of existing work stress research uses structured questionnaires and interviews to test hypotheses, conduct statistical analysis, and to make context free predictions and suggestions. They acknowledge that context free quantitative methods are undoubtedly useful, but suggest that the totality of the stress experience is often missed, including the context where stress arises and how people perceive, attribute and evaluate such a context in relation to their wellbeing. Additionally, that such crucial information can be discovered through qualitative methods, thus they request more use of alternative methodologies such as Qualitative methods.

In line with this, the current study used semi -structured interviews and Thematic analysis to add an in depth dimension to the quantitative research that preceded it. Thematic analysis was thought more suited to the current research as the researcher was trying to

identify overarching themes rather than an individual's perspective on issues, as with IPA. The current qualitative study is part of a mixed methods procedure as it incorporates the quantitative research as its basis, from which a smaller qualitative study was carried out.

### **8.3 QUALITATIVE RESEARCH USING THEMATIC ANALYSIS**

Braun and Clarke (2006) suggest that much research uses thematic analysis in an indirect way but it is often claimed to be something else. For example, discourse analysis or content analysis (Meehan et al., 2000) or where it states that data were 'subjected to qualitative analysis for commonly recurring themes' (Braun and Wilkinson, 2003, p30). But there are few research articles that claim to use thematic analysis, thus the current author is only aware of a limited number of research studies that have used thematic analysis per se to examine work stress.

Recently, Chiang, Chen and Sue (2007) analysed nurses' experiences of role strain when taking care of patients with Severe Acute Respiratory Syndrome (SARS). They adopted an interpretive /constructivist paradigm and the data were analysed using thematic analysis. In their study, twenty one nurses who had taken care of SARS patients were interviewed in focus groups. The results were analysed using thematic analysis and indicated, from the interpretative / constructivist perspective that the self-state of nurses during the SARS outbreak evolved into that of professional self as: self preservation, self monitoring and self-transcendence.

Taylor and Barling (2004) investigated 20 experienced registered nurses working as mental health nurses. Their study aimed to identify work-related problems in order to; 1) assist mental health nurses to locate the sources and effects of carer fatigue and burn out; 2) set up a dialogue between participants and the identified sources of stress in the work place; 3) address the identified problems and make recommendations to a local Area Health Service to prevent and manage stressors in the practice of mental health nursing. Data collection was via semi-structured interview and data analysis by thematic analysis.



The analysis entailed using a computer assisted thematic analysis procedure (Taylor, 2001) in relation to the project aims. The thematic analysis procedure included, firstly, transcribing the interviews (using pseudonyms and changing other identifying material to protect identities). Each interview was then analysed separately to locate sub themes, and the sub-themes from each participant were collated into common themes. The themes and sub-themes that were identified gave insights into what was being communicated about the nurses' experiences, which formed the basis of the recommendations to the Mental Health Division of the Area Health Service. According to Taylor and Barling (2004), the sources of work related problems for mental health nurses were; employment insecurity; casualisation of the workforce; issues with management and the system; difficulties with the nature of the work; inadequate resources and services; problems with doctors; aggressive and criminal consumers; undervaluing consumers and nurses; physical and emotional constraints of the work setting; nurse-nurse relationships; and horizontal violence. The effects of stress were shown in dealing with and reacting to work place stressors.

These studies illustrate how thematic analysis can be used to inform the researcher about the experience of stress at the individual level, and the sources of work related problems that may cause stress. Thus demonstrating how useful thematic analysis could be to the current research.

The current study is similar to Taylor and Barling (2004); that is, data collection is addressing the area of stress via semi-structured interviews, and data analysis is via Thematic Analysis. As stated in Chapter 4, the aims of the current research are:

- to explore further and gain a more in depth understanding of the findings of the quantitative survey completed by one of the Fire Services that were part of the longitudinal study
- to get the perspective of Fire service personnel on support and interventions that are available within the service and their suggestions for improvements.

It is hoped this will enable a more enriched understanding of the views and attitudes of this particular sample. As far as the author is aware, there is no published research in peer reviewed journals using qualitative research method, thematic analysis to explore stress in the Fire services.

## **8.4 METHOD**

### **8.4.1 DESIGN**

For the current research, semi structured interviews were utilised. This was preferred to focus groups and structured interviews. Although focus groups would be very efficient at gaining detailed subjective information, research suggests that the group format may inhibit genuine opinions being expressed due to concerns surrounding confidentiality (Brownlow, 2006). This would be particularly true for the Fire service in the current climate of restructuring and the changes that are being implemented. Similarly, a structured interview style would be too rigid and would not enable the participant to be questioned on particular aspects of an answer, leading to more in depth answers, as this entails the researcher adhering to a list of previously prepared, structured questions.

According to Banister (1994), in semi-structured interviews, the researcher works from a set of previously prepared questions, but there is scope and flexibility enough for the interviewee to expand upon answers and introduce new lines of thought, and for the interviewer to follow-up on and respond to both expected and unexpected issues that are raised. Especially since some of the questions are based on the quantitative findings of the related prior research, it was felt semi-structured interviews would be the most appropriate for the current research as it allows for flexibility during the interviews.



## **8.4.2 PARTICIPANTS**

The participants were from one of the Fire services who were a part of the longitudinal study. In total, six participants took part in the study and participation was on a voluntary basis. Unfortunately, the researcher had minimal influence on how participants were recruited. It was agreed with the Fire service that it was best that the contact at the Fire service would recruit the participants. The researcher requested that ideally participants should represent staff from all strata of the Fire service; from Fire Fighters to Senior managerial level staff to admin staff.

In order to recruit participants, the researcher wrote a document explaining the purpose of the research and what participation would entail. This was given to the contact at the Fire service who used it to enrol participants. The contact at the Fire service sent out an e-mail with this document to heads of department, and they distributed it to their sub-ordinates. Then, the participants who came forward were recruited.

The six participants who volunteered were all managerial level. To increase voluntary participation, personal details of participants were not requested (this was mentioned in the document that was e-mailed), especially as the interviews were to be taped. Thus, the only information that was requested was rank and job title, but it was known that all six participants had served within the Fire Service for at least ten years.

## **8.4.3 MATERIALS**

### **8.4.3.1 INTERVIEW SCHEDULE**

The interview schedule consisted of 11 questions in total (as some questions had 2 or 3 sub sections) (please refer to Appendix Two). The questions for the interview were derived partly from the findings of the quantitative analysis (these were summarised in a report to the Fire service) and some intervention related questions. These latter questions were included as the quantitative study focused more on causes of strain. Thus, it was

hoped that this part of the research would expand on the current research by following up the quantitative findings, by exploring potential interventions and solutions to these causes of strain from fire personnel's perspectives

#### **8.4.3.2 PARTICIPANT INFORMATION SHEET**

An information sheet (please refer to Appendix Two) was prepared, which explained the purpose and importance of the research, and outlined what the participants' role in the research would be, including the method of data collection and the amount of time required of them. The participants were assured that all information given would be anonymous and that they would only be referred to as a participant number (for example, participant 1, participant 2, etc) in the study and that they were free to withdraw from the study at any point. Additionally the participants were made aware, before they considered taking part, not to volunteer if they did not want to be taped during the interview. Finally, that the findings of the research would only be used for the purpose of the PhD and for use for publication of related academic research papers.

#### **8.4.3.3 WRITTEN INFORMED CONSENT**

A written informed consent sheet (please refer to Appendix Two) was prepared, to be completed before commencing the interview. This confirmed that the participant understood the details of the research and had consented to act as a participant. The form reiterated that participation was anonymous and that they had the right to withdraw at any time. This was signed prior to the interview by the supervisor of the research, and then just before the commencement of the interview, by the participant and the researcher.

#### **8.4.4 ETHICAL CONSIDERATIONS**

In order to carry out the study, a proposal for this part of the research was prepared and had to be approved. This included providing information on: the rationale behind this part of the study, the semi-structured interview questions, the participant information sheet



(explaining the participant would be taped), and consent forms ensuring confidentiality were submitted to the Ethical Committee at Middlesex University.

Again all aspects for this part of the study were approved by the Middlesex University Psychology Department Ethical Committee. Thus the research met the stringent criteria set by the BPS, and then ethical approval was given.

#### **8.4.5 PROCEDURE**

Fire service personnel from various levels of the Fire service were informed about the study by the contact at the Fire Service using e-mail. It was communicated that participation would be on a voluntary basis and that the format of the study would be a semi-structured interview lasting approximately 30-45 minutes that would be tape recorded and then transcribed verbatim by the researcher. The participants were recruited as described earlier and given an information sheet and asked to provide written consent, (as described in the previous section).

The interviews took place at the headquarters of the Fire service. Each participant was interviewed using the semi-structured interview questions (please refer to Appendix Two). The interviews lasted on average 30 to 40 minutes (except for one participant who took over an hour). After the interviews were conducted they were transcribed verbatim by the researcher.

The thematic analysis procedure described by Braun and Clarke (2006) was used to analyse the data.

#### **8.4.6 RATIONALE FOR USING THEMATIC ANALYSIS**

Thematic analysis is broadly a method for identifying, analysing and reporting patterns (themes); helping to organise the data in 'rich' detail (Boyatzis, 1998). However, it does not exist as a 'named' analysis like other methods, for example narrative analysis and

grounded theory (Braun and Clarke, 2006). Thematic Analysis is independent of theory and epistemology and can be applied across a range of theoretical and epistemological approaches. Because Thematic analysis has theoretical freedom, it is flexible and provides a method for identifying, analyzing and reporting patterns (themes) within data. It also minimally organizes and describes data sets in (rich) detail (Braun and Clarke, 2006) and interprets various aspects of the research topic (Boyatzis, 1998). In this line, Braun and Clarke (2006) suggest that thematic analysis can be an essentialist or realist method that can be used to report experiences, meaning and the reality of participants, or to examine the ways in which events, realities, meanings and experiences are the effects of a range of discourses operating within society. Additionally, that it can be a 'contextualist' method, which acknowledges the ways in which individuals make meaning of their experience, and therefore, the ways the broader social context impinges on those meanings, while retaining focus on the material and other limits of 'reality'. In addition, they suggest thematic analysis is a method that works both to reflect reality and to unpick or unravel the surface of 'reality'. They stipulate that it is useful in summarising key features of a large body of data and/or to offer a 'thick description' of the data set. It can highlight similarities and differences across a dataset, generate unanticipated insights, allow for social as well as psychological interpretation and can also be used for producing qualitative data suited for informing policy development.

Thematic analysis was considered the most appropriate analysis for the present study because it focuses on what was said as opposed to just how it was said, compared to other methods of analysis such as discourse analysis. This method allows the researcher to organise data into thematic sets as determined by the researcher. That is, it allows the researcher to gain a description and to capture the predominant or important themes that are reflected across the entire data set. Braun and Clarke (2006) indicate that, although in such analysis some depth and complexity is lost, a rich description is maintained and that this is an effective method when investigating an under researched area, or with participants whose views on the topic are not known, as in the present study. Additionally, the current research employs a Deductive (theoretical/ model driven) approach as opposed to an Inductive (bottom up/ data driven) approach. According to



Brownlow (2006), in a Deductive approach, the researcher has a prior theory and hypothesis and tries to find instances of that theory within the data. Where as in an Inductive approach, the themes are identified by the researcher and are strongly connected to the data; thus they are not wedded or fitted into a pre-existing theoretical framework (Braun and Clarke, 2006). As this part of the current research was aimed at gaining a better understanding of reasons behind the quantitative findings, it is a model driven approach guided by a theory.

## **8.5 REFLEXIVITY**

With respect to reflexivity, qualitative researchers often speak of giving the participants a ‘voice’ in the research, ‘allowing the data to do the talking’ and ‘allowing themes to emerge from the data’. Thus, in using an Inductive thematic approach, the expectation is that the analysis is as objective as possible, because themes within the data are found independent of the researchers’ preconceptions or a pre-existing theoretical framework. However, within the current research, this is an unsustainable position, as the qualitative research was carried out to gain a better understanding of quantitative findings. Some of the research questions, for example, are based on previous quantitative findings. Therefore, even before the research is conducted, some bias, opinions and assumptions are being brought into the research. Thus, themes are not sitting waiting in the data, ready to reveal themselves (Ely, Vinz, Downing & Anzul, 1997), but are found and formed by the researchers’ prior knowledge of the area and the views that they may have, and explanations they may want to find, and thus may to some extent influence the research.

With respect to the current qualitative study, the aim (as stated above) is to gain a deeper understanding and insight into the views of Fire personnel about the findings of the quantitative part of the research, as well as possible interventions and support. From a broad methodological perspective, the current research is ‘looking for answers’ to some questions that are based on previous quantitative findings. Hence, throughout the interviews I was conscious when using the open ended questions and probes that I was not trying to lead the participant in any way. Related to this, from an epistemological

viewpoint (that is, the way the research questions are approached), there is bias as I was conscious that I may unwittingly look for particular leanings in any of the responses. More specifically, my prior knowledge of the negative consequences of restructuring may risk a tendency to look for 'change' causing stress with negative implications. Thus, I was vigilant to be open minded when assessing the responses. My background knowledge from liaising with various Fire personnel over many years could colour the way themes are interpreted. Thus, keeping both factors in mind, I was eager not to do this and be as neutral as possible in analysing the data for themes. This is re-iterated by Ely (1997) mentioned above.

Thus I acknowledge that there is an element of bias involved. For example; the fact that a researcher wants to investigate a particular area arguably indicates bias at the outset. For instance, whether ones interest is positive or negative with respect to the subject, will influence the research, even though it may be at a subconscious level. Thus, in each area, I was conscious that different biases are operating, whether overtly or more at a subconscious level. Banister's (1994) study reinforces this belief.

According to Banister (1994), it is important to think through and articulate what preconceptions are being brought to any study. With respect to the current study, I acknowledge that there is bias when analysing the data, for the reasons given above. Thus, in analysing the qualitative data I was looking for explanations for the quantitative findings. Despite this, I was fully aware of the need to be as neutral and objective as possible when looking for the themes within the data.

A 'theme' in the context of thematic analysis captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set (Braun and Clarke, 2006). Braun and Clarke further specify a pattern/theme (or what 'size' a theme needs to be), 'as prevalent in terms of the space within each data item and of prevalence across the data set. That is, ideally, there will be a number of instances of the theme across the entire data set, but that more instances do



not mean that the theme is more crucial. This judgement would be made by the researcher'. Braun and Clarke (2006) reiterate the importance of retaining flexibility and that rigid rules do not work in defining themes. Furthermore, that 'keyness' of a theme is not dependant on quantifiable measures but rather on whether it captures something important in relation to the overall research; also that there is no right or wrong method for determining prevalence and themes, providing it is done consistently throughout the data.

## 8.6 THEMATIC ANALYSIS PROCEDURE

The Braun and Clarke (2006) six- phase procedure for Thematic Analysis was used for the current research. The six phases are: **Phase One:** Familiarising yourself with the data: Transcribing data, reading and re-reading the data and noting down initial ideas. **Phase Two:** Generating initial codes: Coding interesting features of the data in a systematic fashion across the entire data set, and collating data relevant to each code. **Phase Three:** Searching for themes: Collating codes into potential themes, and gathering all data relevant to each potential theme. **Phase Four:** Reviewing themes (at two levels): Checking if the themes work in relation to the coded extracts (Level One) and the entire data set (Level Two), and generating a thematic 'map' of the analysis. **Phase Five:** Defining and naming themes: Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, and generating clear definitions and names for each theme. **Phase Six:** Producing the report: The final opportunity for analysis. Selecting vivid, compelling extracts, and relating back to the research question and literature.

Thus, in the current study, the researcher transcribed the tapes. The transcripts were then read and re-read by the researcher to familiarize her with the data/information. In doing this, initial ideas/themes that were evident were noted. These were used to generate initial codes, which were then collated to look for themes. These were then reviewed to form more definite themes in relation to the questions that were asked. The themes were further refined to draw out specifics for each theme and generate broad names for each theme. These were then used to relate back to the research questions asked and to gain a

more in depth understanding of the findings of the quantitative survey completed by the Fire Services.

## **8.7 FINDINGS**

It should be noted that the fact that all participants were managerial level may mean that the themes within this research may have a 'managerial bias', that is, only a managers' perspective. On the other hand, this could be taken as a positive standpoint in that managers ideally should have an overall view and understanding of factors that are affecting the Fire service personnel.

Analysis indicated the following themes and sub themes. The over arching themes and sub theme(s) within these were named. Each theme/sub theme is illustrated by evidence from the participant(s).

### **8.7.1. GENERAL THEMES**

#### **8.7.1.1 THEME: COMMUNICATION**

This theme was consistent with all the participants. They acknowledged the importance of communication within the Fire service and its importance between and within all levels. That is, Fire personnel felt that there was a lack of explanation as to what changes were being implemented, as well as the reasons for them, and that the people who have this information deliberately do not share it; thus breeding a culture of uncertainty.

*S1: ...Um...so communicating the need for the change might be quite an illuminating exercise. But we are not good at that and we never have been.... I think that there is a critical communication issue and we have a number of departments making decisions about what we do. Not sure we are well communicated sister departments who will have a part to play in delivery.*



*S3: But again background of stress and frustration and things, nobody actually knows what is going to happen. ...., and nobody knows and all we hear are whispers and odd words, well that is not good, so who knows It's the first of April and nobody knows what is going to happen so that ties in with a lot of things, lack of communication, lack of vision.*

*S5: ...., but there are other areas within in the organisation where people like to keep hold of information even if it might be public, in the sense of public within the organisation, it is not being spread out so people start to get concerned, as they do not know what is happening,...-*

#### **8.7.1.2 ROLES**

This is a broad theme that was again consistent with all participants. Most of the factors that came up were indirectly related to the restructuring of the Fire service. This has entailed, for example, getting rid of the some of the middle management level and different roles being created, as well as changes to roles. The majority of the sub themes were related to the changes to the roles that have and are taking place. The overall feeling was that Fire personnel, although acknowledging a need for change, did not embrace it.

**Sub theme: Role Changes:** This has entailed changing what individuals do within their job. For example, Fire fighters are now not only putting out fires but part of their job is being proactive about preventing fires. That is, they now have to give talks to school children about fire prevention and have to fit fire alarms all in the cause of reducing deaths due to fires. The ethos of the fire service now is not only putting out fires, but also preventing them in the first place.

*S5: I think certainly middle management and shop floor level, Fire Fighter, Crew Manager, Watch Manager, Station Manager and Group Manager. Strategic wise I am not sure because I have not been exposed to that level but when you look at all those*

*levels, obviously the Fire Fighters had to change the way they do things, we are not reactive to fires now, we are being proactive and going out and doing community fire safety...*

*S2: I think maybe three and a half years ago there were some significant changes, there were some rank to role things that happened..... Basically we took our established rank structure and created a role for people to work in and as part of that some new roles were generated ...*

Related to role changes, several participants commented that there was no support to manage the role change.

**Sub theme: No support for role change:** This is the idea that there is no specifications about what a role entails and it is often left up to the individual to decide what their role entails. That is, lack of guidance from management of what is expected from a person in a particular role.

*S1: The roles are, what you make of them, they are down to the personality of the person in the role...*

*S4: ... but the whole thing is that the Fire Fighter's role has changed. And quite rightly it should change and I am up for that, because in general we are there to work out their \*\*\*\* at whatever level, but there seems to be no support network behind that.*

**Sub theme: More accountability/responsibility:** This has meant that managers who have in the past been able to pass on responsibility are not able to and they also have to be accountable for their actions and have to specify how things are achieved. Thus, managers now are more accountable and are held responsible for their actions.

*S1: ... I think I said before it is that emphasis on managerial activity..., ... there are more hard decisions to make than what they may have previously, they could have avoided it*



*previously by passing the buck up the line, ... I think the reality of what they do has not changed a great deal but there is a greater emphasis on managers being accountable...*

*S4: Accountability. We are massively accountable for what we do and how we achieve it. Much more open than we ever were before and because of that there are mechanisms for recording how we achieve what we do and what we achieve so because of that we are more accountable now than we have ever been and because we need to prove that and what we do and let people have a look at what we do then this is why all the paperwork is involved and all the information is involved.*

*S6: I think there has been a lot of perceived change in that we went from a rank structure to a role structure which meant that some people were feeling undervalued in the rank to role. I think the reality of what they do has not changed a great deal but there is a greater emphasis on managers being accountable*

Several participants also felt there was more pressure to meet targets. This exemplifies how the Fire service is trying to 'meet' the targets and standards expected by the White Paper (June 2003; Please refer to the Research Framework chapter Four).

**Sub theme: Pressure to meet targets:** This has entailed the Fire service, as an organisation, having to meet targets, for example, to reduce the number of deaths due to fires (fitting fire alarms etc).

*S2: ... but I think the organisation is putting more emphasis on things like performance management and recording information and planning for work so that is going onto a smaller team, ...*

*S5: ... Now fifteen, ten ago when I was at their level although we had targets, they were not rigidly set, you need to go and fit some smoke alarms, although we are not bothered how many you fit, whereas now, they have set targets, so they are under pressure, which*

*obviously has a knock on effect on their role and stress levels and that sort of thing, plus they are getting bombarded by the Fire Fighters and middle management from above.*

### **8.7.1.3 LACK OF CONTROL**

As a result of the changes that were being implemented many personnel felt they had no control. Examples of lack of control include individuals being assigned to jobs at short notice and the length of time in each job being short (for example six months).

*S1: Yes it has caused me stress. My job changed six months ago and it looks like it might be changing again. I have grown into the fact that now, well...*

*S2:... That was a significant move, coming from a place where I was really quite comfortable and motivated by to very a different environment so I suffered quite a lot of remissions( ?), quite negative feelings and it took me quite a long time to be able to turn that round to start performing in this role.... And I think I was dropped in it really. "there is a piece of work, we would like you to work on it" but I did not have the knowledge of the subject to actually help me to do it..*

The above participants' view also gives evidence for lack of support for role changes that were taking place.

### **8.7.1.4 A LACK OF TRUST**

Several participants mentioned a lack of trust that had built up within the Fire service. This is a theme that later comes up specifically as exacerbating stress in Fire personnel.

*S1: ... Because we live in a organisation which has become in my view, less trusting, because, it is quite possible that we have betrayed the trust and are continuing to betray the trust and therefore Senior Managers, Principle Managers can't now allow us to be*



*trusted because they know we will take it the wrong way... There is a lack of trust amongst departments... Lack of trust exists between Principle Officers and supervisory and lower roles and even to some extent to middle managers like myself and I do not really know the answer, perhaps I would say, I don't know whether the lack of trust really is endemic other than that there seems to be an element of it everywhere but that is to some extent, stressful for middle managers as much as anything, not knowing what kind of dance...*

*S5: ... People do not like change, and there were a lot of changes going on at that time and that has affected a lot of people in lots of areas. Also I think that is a reflection on the amount of people who responded to the reports as well, because of all the change going on, not being able to trust management, not knowing where the results of this report were going to go, even though when you started it, we tried to be open and honest and up front with everybody, there is still distrust in place*

#### **8.7.1.5 LACK OF RESOURCES**

Another theme that was mentioned by several participants as causing problems for the Fire Brigade was lack of resources. This encompassed both financial and human resources.

*S1: But that is the main problem for the Brigade, it is the lack of cash and the knock on effects that has for recruitment. Well everything comes back to the pot of money, so cash, recruitment, support staff, everything ...*

*S5: Well there are cut backs all the time, consequently the Fire Service is being restricted on the amount the finances they have got to do things which is making it really difficult to do things, ... well we are going to have to forget about that because we have not got enough money to pay for that post, so things are becoming tighter,...*

## **8.7.2. THEMES SPECIFIC TO CAUSES OF STRESS**

In relation to 'serious causes of stress', several themes emerged. The majority of these were similar to the broad over arching general themes mentioned above.

### **8.7.2.1 LACK OF FINANCIAL RESOURCES**

This includes not having sufficient finances for training and recruiting etc.

*S1:... personally it is achieving the outcome with the amount of resources and time that's allotted.*

*S3: People, money, time constraints. I will give you an example. The worse thing at the moment is the cut in the budget, the training budget is being cut as well. It is going to be worse next year and worse the financial year after...*

It is possible that people feeling 'under valued' could stem from feelings of uncertainty, which in turn is bred from a lack of sharing of information. That is, lack of communication, which seems to be an underlying theme with respect to serious causes of stress. Another issue is not being acknowledged for the work they do.

### **8.7.2.2 NOT FEELING VALUED**

This entails personnel feeling that they are not being acknowledged or recognised for the work they do (as stated above).

*S2: ... What are they expected to do and how is their contribution being measured or observed or valued. How are they actually feeling... the work that they are doing on a daily, routine monthly basis whatever is actually being acknowledged in some sort of way and you know, I do not think we are particularly a very good organisation for giving credit where it is due. I think we can be quite quick to criticize...*



*S4: ... personally, and colleagues as well, there is a massive feeling of being undervalued in the Fire Service because nobody recognises the work that goes into providing the service that we give. There is a lot of work that goes on there and there is no praise, no reward*

### **8.7.2.3 UNCERTAINTY**

This entails personnel feeling 'threatened' because they are not aware what the changes, and how they will impact on them.

*S2:....I think because I have got much more insight into where the change has come from or why it is coming I do not feel quite as threatened by that but I think there are some that perhaps have not had the full explanation I think and it has taken a long time to put those changes into place. Rather than actually saying "this is the decision"... at the moment we are in a position where there is lots of indecision or it is taking a long time and so we are not quite sure.*

*S3:...We have people who are managing in management roles who can not communicate, so sometimes the message does not get down there, so that leads to uncertainty, well what one station will say "well we have said we will make these changes", the other station will know nothing about it, so you create this uncertainty where people actually are (uncertain)...*

This quote above could also be used to exemplify 'lack of sharing of information', as well as the ones listed within this theme.

#### 8.7.2.5 LACK OF SHARING OF INFORMATION

This related broadly to the lack of communication within the organisation; specifically, personnel not being told what is expected of them within their roles.

*S3: ... But across the board it is purely a lack of direction from strategic level, telling people what exactly is required of them and then they know what they need to do to meet the role. I think that is what stresses most people, so they get the impression that they have too much work, deadlines are too tight, not quite sure what (their role)...*

#### 8.7.2.5 HOME-WORK INTERFACE

Another theme that directly and indirectly had factors that were associated with causing stress is the home-work interface. That is, individuals taking their home / personal problems to the work place and this having an impact on their work.

*S6: I think people's lives are more stressed and I do not think there is that clearly defined work/home ... I think the stresses will ebb and flow and if you have high stresses at home, perhaps spent a lot of money on the credit card over Christmas, and if that comes at a time when you may have been asked to change your watch or take on extra responsibilities at work, then it becomes a problem and then people will always default to work-related stress. That is just my own personal feeling. You cannot entirely separate the two.*

*S5: ... was home work. Stress outside the job ... Because I think that has a big bearing. People's lives outside of work has a bearing on people's work ethic, on people's coming to work and doing a job, if they have got huge problems outside, and I think, this is personal opinion, ... That's right, there are a lot of things like debt problems, relationship problems, all that falls into work and I think people now bring a lot of their private problems and come to work .... and I think that has a lot of bearing on how*



*people react at work and they sometimes use things at home to sometimes manipulate what goes on at work, for example trying to get time off, things like that, ...*

### **8.7.3 THEMES RELATING TO STRESS AND RESTRUCTURING**

Another finding was that two of the themes that arose when asked about Restructuring with respect to stress, were the same as those specific to 'causes of stress' and lack of communication . There were also themes that were mentioned under the general themes, for example, lack of control and no support for 'change in roles'. However, two other themes that arose with respect to restructuring were:

#### **8.7.3.1 RESISTANCE TO CHANGE**

This refers to personnel resisting change due to lack of resources putting more pressure on fewer people to do more work.

*S3: ...so it is going to be more people doing more work, less people, but no extra money. So the changes are out there but I think some people are resistant to change. ...Again coming back to the thing there are a lot of people who have said it is the changes in the Fire Service which have stressed me out...*

#### **8.7.3.2 PACE OF CHANGE**

This is with regards the changes, personnel feeling that there has been a great deal of change in the last five years and that the pace of change has been high.

*S6: Change brings with it stress, particularly the pace of change and amount of change and in the past five years, the pace of change has been quite high.... In relation to stress? We have some Fire Fighters, especially some long term Fire Fighters. Some have taken the change personally. And it is like the local management get blamed for decisions that*

*were taken by the national management as a result of the dispute, so in that way we are still paying for the dispute. And they get upset and blamed and forget that they were part of the mechanism that brought it all about in the first place.*

## **8.7.4 THEMES SPECIFIC TO SUPPORT SYSTEMS**

### **8.7.4.1 AWARENESS OF STRESS**

Linked to the issue of stress, several participants mentioned awareness of stress. That is, both at an individual level by managers, as well as at an organisational level, through stress audits. Also trying to be more aware of the possible existence of stress and its impact on the work force. Also to be able to identify it, for example through symptoms people may have and be proactive in order to reduce it, by taking action to lessen the effects of the sources of stress on individuals.

*S1: ...we have had a stress audit, but that perhaps ought to be a more continuous process and a set periodical between audits so that the stress can be monitored and if we are heading towards particular difficult times,... so from a purely managerial point of view it would be about a predictive sort of audit on stress.*

*S2: ... So I just think, you know, better awareness of what it is all about, allowing colleagues, my peers, line managers to take the time to recognise some of the symptoms of stress... I think Managers at all levels could basically be having their awareness raised as to the impact of stress, the issues relating to stress, the cost of stress. What it means in terms of quality of work. It is alright keeping people at work but if they are stressed they will not be very good at work. How do you actually recognise that and try to take some of the stresses away*



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*S1: Talking generally... I can talk about some cases where we have had people who, within the role they occupied they have a relationship with another or perhaps two more people, which have actually supported them in that role over and above where they might be competent on their own and taking them out of that comfort zone into a new place where they have been in difficulty...*

*S2: ...Obviously there is a sort of managerial support network so you can take some of your concerns, if you have got that rapport or relationship or confidence in the Manager you can discuss those with that person. I would say the nature of this job as well, it allows you to form good relationships...*

## **8.7.5 IMPROVEMENT TO SUPPORT SYSTEMS**

When participants were asked in what ways could the available support be improved upon and what other support systems could be implemented, the themes that were most common were:

### **8.7.5.1 ADVERTISE AND MAKE SUPPORT MORE ACCESSIBLE**

This theme is related to making support more accessible by having it available on a more 'full time' basis and also letting personnel know (i.e. made more aware of) of the existence of support that is already available.

*S1:..Well basically at the moment we pay on an hourly rate and I think we could economise by either up front buying so many hours a year, or paying a retainer to retain their services so they are more on call.*

*S5:.. I think possibly, the only thing I think is advertising them a little bit more..*

With respect to improving on the available support, several participants suggested coaching and mentoring

### **THEME: COACHING AND MENTORING**

This entails having a form of support whereby individuals can verbalise worries and concerns directly and get feedback.

*S2: I think outside of that coaching and mentoring is something that I do not think we have a particularly good structure set up for that but I have accessed it externally and it has proven to be extremely useful and it has just allowed me to verbalise some of my thoughts about my concerns to somebody else and she's proved very good at sort of listening to that and giving good solid feedback.*

*S3:... the problem lies with is the way people have managed the support... We used to have a coaching system, a coaching network. Which was not just about coaching you in your job it was about all the things that appertains to our job so if you were struggling with something or something was bothering you, you would go and talk to them. We had*



*coaching and we have a mentor system but we don't have enough of them, so a coaching, mentoring system at lower level*

Linked to coaching and mentoring, another theme was based on the idea of a scheme whereby people were able to talk about how they felt.

### **8.7.5.3 CONFIDENTIAL TALK**

This entails having a support whereby personnel are able to voice their concerns confidentially.

*S2: ...the word stress is a negative phrase. It is a thing that most people are under at some point in time whether it is generated because of work, or whether it manifests itself because of work, that is, going back to your report, not so much where does it come from, where does it display itself? I think it would be a good thing to allow people to discuss more openly and to talk about and to understand*

*S3: Confidentiality wise, I think other than going outside the Brigade, I think internally we need something a little bit more robust where people can talk to people about issues but feel it is a little more confidential... but I just think there should be something internal that could probably solve your problems but I think there is a lack of confidentiality.*

### **8.7.6 IMPROVEMENTS FOR THE FUTURE OF THE FIRE SERVICE**

With respect to suggestions for improvements to the organisation as a whole and issues that needed to be addressed to improve the Fire service, two themes that have been referred to before, were noted. These were communication and coaching/mentoring. However, there were also other themes that were mentioned as being pertinent for the future of the Fire service.

The majority of the participants felt that if a reward system were implemented, this would improve feelings of being valued and personnel would feel their efforts were being acknowledged.



### **8.7.6.1 A REWARD SCHEME**

*S2:... I think this organisation would do well to recognise more frequently the efforts that people make.*

*S6: If money was no object, I think the sort of thing we could do would be more rewards, I think, at the moment nearly, everything we do is rather punitive. For example a third of our staff did not have any sick at all last year and it would be really nice to reward them with an extra day's leave or a couple of duvet days say.*

### **8.7.6.2 NEW IDENTITY FOR FIRE SERVICE AND FIRE PERSONNEL**

Finally, a theme that it was apparent that the Fire service needed to address was the new identity for the fire service and fire personnel. The majority, if not all, of the participants felt that as a result of the restructuring and the huge organisational changes that had occurred, the 'new identity' of the fire service needed to be promoted. That is, they felt that the public, as well as those who want to join the Fire service, still had outdated ideas of what the Fire service and Fire personnel do, based on the 'old' image. That is, fighting fires and attending road traffic accidents. Additionally, several participants felt that the kind of person who is now recruited to be a fire fighter has to have different qualities to someone who would have fitted the 'image ' previously.

*S5: I think there is still this myth that Fire Fighters sit in the Fire Station playing cards or playing snooker waiting for the bells to go off. But it is the complete opposite now, ... Fire Fighters now are having to be proactive and we are out educating the community... need to make people aware now that joining the Fire Service is not about going out and fighting fires and doing road traffic collisions all the time, yes that is part of our job but the role also involves now being proactive, going out and educating so you are looking at almost a different type of person and that has been a big change for the older fire fighters... Yes, it is a lot more versatile now, it is a bigger range of skills that you need, I*

*think, to join the Fire Service, because you still have got to undertake the operational side.*

*S6: The men spend 10% of their time, maximum 10% on the operational stuff, fire fighting, road crashes... selection process is based around what is called personal qualities and attributes, the Government have worked really hard on a psychological profile... that is what a Fire Fighter should be and they should have these attributes. We do gear the interviews to that and it is generally the people who have had more life experience, the good communicators, and they are the ones who get the job. The flip side of that is that sometimes they struggle with the physical side,*

## **8.8 SUMMARY**

The analysis suggests that one of the over arching themes that underlies the dissatisfaction felt by Fire personnel is to do with communication. Many of the themes were directly or indirectly related to this. Although, for example, the themes lack of trust, uncertainty, lack of control etc. were important stand alone themes, the main theme that was underlying these was a lack of communication.

The themes that arose when asked a question specific to stress were the same as those themes that were voiced when other general questions, not necessarily addressing stress were asked. This could imply that although fire personnel within this sample (and possibly in all the fire services that participated in this study) do not necessarily specifically mention stress as a factor that underlies dissatisfaction, it is a pertinent and important issue that comes up in different 'arenas'. Similarly, with regards to Restructuring, themes that were specific to stress as well as those mentioned under the general themes arose. This could denote that restructuring had some influence on the overall stress levels reported by fire personnel (as would be expected). With respect to the questions regarding existing support systems, improvements to the existing systems, as well as improvements to the Fire service for its future were suggested. There was less overlap with the general themes but several themes were highlighted for improvements,



for example, making counselling more easily available, coaching/mentoring and introducing a reward system. With respect to improvements for the future of the Fire service, the most pertinent theme was a 'new identity'. All of these could be factors that could be recommended as possible interventions that the Fire service could think of implementing to support staff.

Some validation for some of the themes comes from the 'Fire and Rescue Service National Framework 2008/11 Consultation-Summary of Responses' document published in May 2008. That is, this document states what the Fire service should be doing in order to meet the standards of 'best practice'. For example, cutting down on the number of deaths due to fires and being more proactive in fire prevention, that is, fitting more fire alarms and giving talks to school children about fire prevention etc. The findings of the current research show that the Fire Service are trying to do these things specified by the National Framework document and White Paper in order to abide by the government objectives and priorities expected of the Fire service.

One point of caution with regards to this qualitative research is that the sample size was only six voluntary participants and all the participants were managerial level. Thus, this is likely to be a biased sample, in that the sample does not represent the different strata of Fire service personnel, as was hoped. However, an advantage of the participants all being at managerial level is that they may be expected to have an over view of the significant issues within the organisation that affect personnel, as well as knowledge of pertinent factors that may influence the operational side of the organisation.

The themes will be discussed in relation to the findings of the quantitative research (where relevant) in the Discussion chapter that follows. The researcher believes the qualitative research has added a depth of understanding to the responses behind the quantitative survey, as well as allowed participants to 'voice' their opinions on interventions and support.

## **CHAPTER NINE**

### **DISCUSSION AND CONCLUSIONS**

#### **9.1 OVERVIEW OF CHAPTER NINE**

Chapter Nine discusses the results of the Quantitative and Qualitative analyses for the current research. The chapter begins with a summary of the broad research findings followed by the findings for each of the hypotheses in relation to the quantitative research. The chapter then proceeds to draw together all of the findings in order to address the broad research aims for both the Quantitative and Qualitative aspects of the research. It then compares the current proposed model of Occupational stress with existing models of stress. The chapter concludes with suggestions for possible interventions that the Fire Service could implement and recommendations for the Fire Service, a discussion of the limitations of the current research and proposed further research for the future.

#### **9.2 SUMMARY OF RESEARCH FINDINGS**

Overall the descriptive statistics indicate, that there is good work well-being in Fire Service personnel. The mean values for Job Satisfaction, Competence and Aspiration indicate there is satisfaction with their jobs and they feel reasonably competent and aspire within the jobs. However the context free measure of well-being is above the threshold (a value above the threshold indicates poor General mental health) for good mental health and suggests that Fire personnel have poor mental health. Additionally, the Work Performance measure indicates there is reasonable Work Performance. However, the



results of the qualitative research suggest that there is stress in the Fire Service and it also highlighted possible interventions that may help ease the impact of stress.

The quantitative findings indicated, that Uplifts and Hassles have main effects on all outcome measures in the cross sectional data, except Competence, and in the longitudinal data, Work Performance. In the longitudinal data, both Uplifts and Hassles have main effects only on Job Satisfaction but there are main effects from Uplifts to Aspiration and Competence and from Hassles to General mental health only. In the cross sectional data, Direct coping has a moderating influence on Job Satisfaction, Extraversion has moderating influences on Aspiration and Neuroticism has moderating influences on Competence, General mental health and Work Performance. However, in the longitudinal data Neuroticism has main effects for Competence, General mental health and Work Performance, and moderating influences for Aspiration and Competence.

The quantitative findings also indicated however, neither Neuroticism nor Extraversion had any influence on Job Satisfaction. Additionally, Mastery had a main effect on Job Satisfaction, and Mastery moderated the relationship between Uplifts and Aspiration for both the cross sectional and longitudinal data. Furthermore, the results indicated the importance of the influence of Mastery for Work Performance in the cross sectional data as a main effect predictor, and Neuroticism (as a moderator). Whereas for Work Performance in the longitudinal data Neuroticism was a main effect predictor and Mastery was a moderator of the stress process.

With respect to Path analysis, the direct effects suggest that Uplifts and Hassles have direct effects to all the outcome measures except Competence in the cross sectional data and General mental health and Work Performance in the longitudinal data. With respect to indirect (mediating) effects, in the cross sectional data Hassles has an indirect effect via Neuroticism on General mental health and Hassles has an indirect effect via Mastery on Work Performance. In the longitudinal data, Uplifts and Hassles have indirect effects via Neuroticism on General mental health. However, the influence of Coping was limited in all analyses for both the cross sectional and longitudinal data.

The current research therefore, supports the necessity for inclusion of these measures of individual differences within well-being research as they do significantly influence well-being. Moreover, other researchers have asked for the inclusion of these variables within stress and Coping research (For example Pearlin and Schloer, 1978; Weiss and Adler, 1984; Brief et al., 1988; Cooper and Payne, 1988 and Folkman and Lazarus, 1988).

Overall, the individual differences, Neuroticism and Mastery seem to be important for this Fire Service sample. They had some moderating and mediating influences but their main and direct effects together with those of the stressors (Uplifts and Hassles) appear to be the most important.

The qualitative research suggested possible causes of stress. For example, 'Not feeling valued', 'Uncertainty', 'Lack of sharing of information', 'Lack of financial resources' 'Resistance to change', and 'Pace of change'. The findings also indicated themes related to support and interventions that could be implemented such as 'Awareness of stress', 'Support from colleagues', 'Advertise and make support more accessible', 'Coaching and mentoring' and 'Confidential Talk'. Additionally, themes for improving the Fire Service, included, 'Reward schemes' and 'New identity of the Fire Service'. Finally, the qualitative research also gave greater insight into the findings of the quantitative research.

In conclusion, the results show some support for the proposed model of stress.

### **9.3 THE FINDINGS OF THE QUANTITATIVE RESEARCH**

The proposed model for the current research is illustrated in Figure 9.1

The next section will summarise the findings of the quantitative research in relation to the research Hypotheses. The first three Hypotheses were examined using Hierarchical Multiple Regression Analysis on both the cross sectional and longitudinal datasets. Hypothesis four was examined cross sectionally and longitudinally using Path Analysis



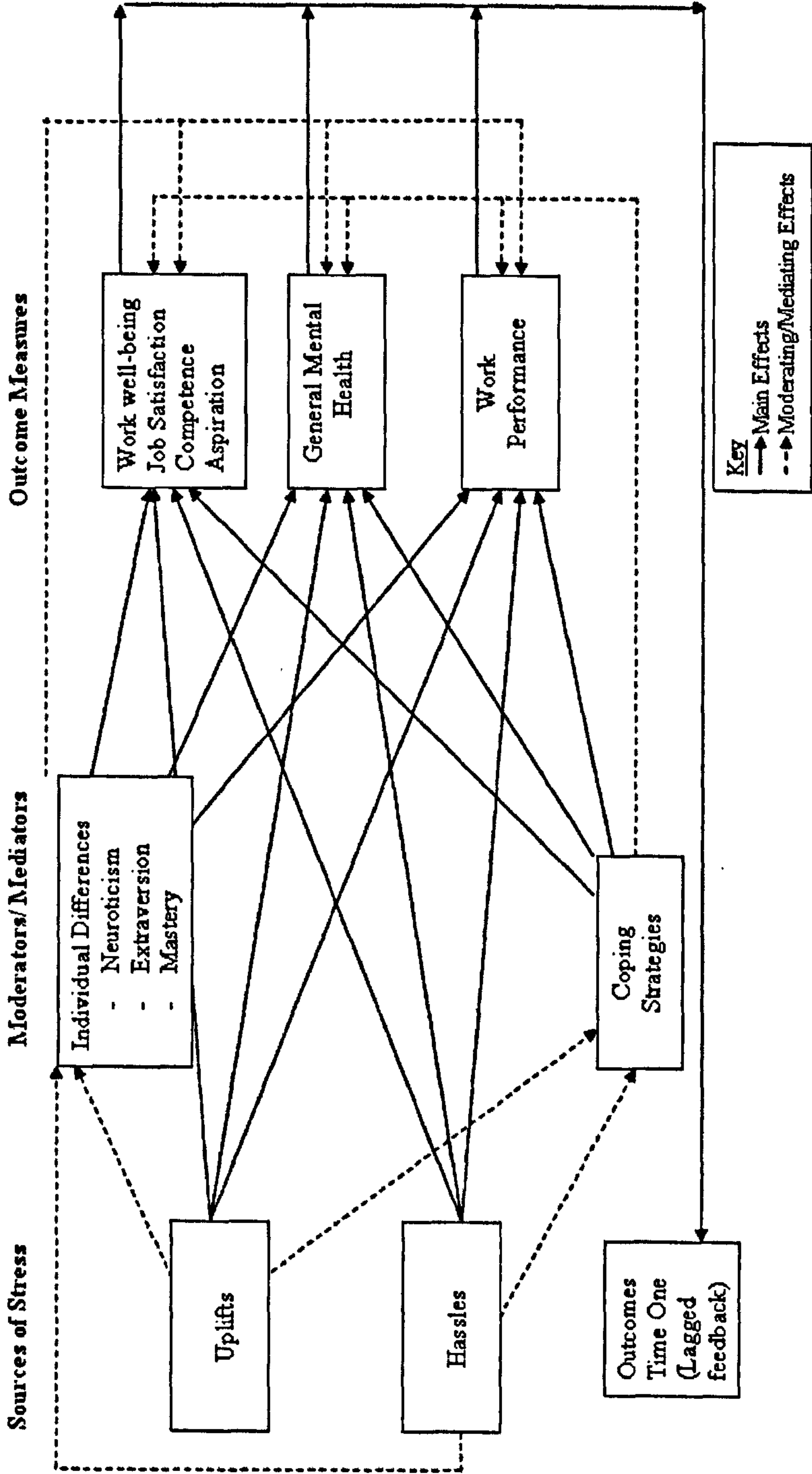
on the longitudinal dataset and the fifth hypothesis was examined using Path Analysis on the longitudinal dataset.

Where appropriate each hypothesis will first be discussed with respect to the cross sectional data followed by the longitudinal data.

Figure 9.1 The proposed Model of Stress

THE PROPOSED MODEL OF STRESS

NB: Work Well Being- incorporates the outcome measure- Job Satisfaction, Competence and Aspiration  
Coping is divided into Direct (Problem Focused) Coping (Changing the Situation, Accommodation and Symptom Reduction) and Indirect (Emotion Focused) Coping (Devaluation, and Avoidance)





### **9.3.1 Hypothesis One: Hassles and Uplifts will have a main effect on outcome variables**

#### **9.3.1.1 Cross sectional data**

With respect to the cross sectional data reported in chapter six, the work Uplifts measure was shown to be a significant main effect contributor to the prediction of Job Satisfaction, Work Aspiration, General mental health and Work Performance. That is, increased Uplifts is predictive of greater Job Satisfaction, higher Aspiration and better General mental health and Work Performance. However, Uplifts was not shown to be a significant predictor of Work Competence. The work Hassles measure was found to be a significant main contributor to the prediction of Job Satisfaction, Work Aspiration, General mental health and Work Performance. That is, lower Hassles was predictive of greater Job Satisfaction, greater Work Aspiration, better General mental health and better Work Performance. Hassles was not shown to be a significant predictor of Work Competence either.

The current findings showing that both Uplifts and Hassles have an influence on Job Satisfaction were supported by Hart et al. (1995) and Hart (1999). The former study suggests that Hassles reported by police officers do not indicate the level of Uplifts they are likely to experience and that both positive and negative work experiences have to be taken into account in order to understand police officers' psychological responses to work. The Hart (1999) study found that work Hassles and Uplifts contributed independently to Job Satisfaction. This is supported by the current research findings. With respect to psychological well-being, both Uplifts and Hassles were predictive of context free (as measured by GHQ), and work related well-being as measured by Aspiration but not of Competence. These findings support Hart (1999) who emphasized, the importance of making a distinction between the context free and the domain specific aspects of psychological well-being when investigating the determinants of occupational stress.

A possible reason for neither Uplifts nor Hassles predicting Work Competence could be because of the training Fire Service personnel (especially fire fighters) receive initially, as well as the ongoing training that is a part of their job. Hence, this training may result in fire personnel feeling very competent at their job. Therefore, as Fire personnel are highly trained whether they feel Uplifted or Hassled at work may have no influence on how competent they feel with regards their job.

#### **9.2.1.2 Longitudinal data**

An examination of the longitudinal findings reported in chapter seven indicate that Uplifts is a significant main effects contributor to the prediction of Job Satisfaction, Work Aspiration (as with the cross sectional data) but also of Work Competence, unlike in the cross sectional sample. That is, high Uplifts predicted high Job Satisfaction, Work Aspiration but low Work Competence. However, Uplifts did not contribute to the prediction of General mental health nor Work Performance. Also in the longitudinal sample Hassles was only a significant predictor of Job Satisfaction and General mental health. That is, high Hassles predicted low Job Satisfaction and poorer General mental health.

The limited findings in the present study for this sample may be explained by the fact there is a large difference between the sample sizes for cross sectional (N=867) and longitudinal (N=123) analyses. Thus the small sample size for longitudinal analyses may have resulted in limited findings for this sample. Additionally, the influence of 'interim effects' (effects of unobserved events during the time lag, such as a job change) could result in some findings that were significant in the cross sectional data (Time One), not being significant in the longitudinal data (Time Two). That is, if individuals have had changes to their jobs since the first survey, it could be that as they are still getting used to these changes; levels of Uplifts and Hassles may not have the same influence.

Other reasons for differences in findings could be that in the longitudinal data the Time One outcomes have been controlled for, so that any factors ('nuisance variables')



affecting Time One outcome would not be influencing the Time Two outcomes. This should also make the results and the predictions more robust for the longitudinal sample.

The results for the cross sectional and longitudinal samples suggest that Uplifts and Hassles have some effect on the outcome measures. In particular, Hassles on Job Satisfaction and Uplifts on Aspiration and Competence in the longitudinal data. Also bivariate correlational analysis indicates there are significant associations between Uplifts and all the outcome measures except Competence. With respect to Hassles, there are significant associations with Job Satisfaction, Aspiration and General mental health. Thus overall there is partial support for hypothesis one.

**9.3.2 Hypothesis Two: Individual differences and Coping strategies will have a main effect on outcome measures (e.g. Parkes (1990) suggests there is a main effect for Neuroticism and Coping on GHQ).**

#### **9.3.2.1 Cross sectional data**

In chapter 6, Neuroticism (Negative Affectivity) was found to be a significant main effects predictor of General mental health, Work Aspiration and of Work Competence. However, Neuroticism was not found to predict Job Satisfaction or Work Performance. That is low levels of Neuroticism were predictive of better mental health, greater Work Aspiration and feelings of Work Competence.

Extraversion (Positive Affectivity) was found to be a significant main effects predictor of Work Aspiration and Work Competence, but not of Job Satisfaction, Work Performance and General mental health. That is high levels of Extraversion were predictive of greater Work Aspiration and Work Competence.

The results suggest that low NA and high PA predict Work Aspiration and Work Competence. According to Watson and Clark (1984) individuals high in NA tend to focus

on the negative side of themselves and the world in general and low NA individuals are more likely to feel secure and be satisfied with their environments. Whereas high PA individuals tend to lead more active lives than low PA people and to view their environments in a more positive way.

Taken together the findings suggest that personality characteristics Extraversion and Neuroticism may be key to predicting work related well-being with respect to Aspiration and Competence, and also possibly context-free well-being, at least with respect to Neuroticism.

Work-related control (Mastery) was found to be a strong significant predictor of all the outcome measures. That is, increased Mastery (low score) was predictive of greater Job Satisfaction, higher Work Aspiration and Work Competence, General mental health and Work Performance. Some support for this finding comes from Spector (1986) who found that a perceived high level of individual control was significantly associated with Job Satisfaction, as well as other factors (involvement, motivation, role ambiguity, turnover and general performance). Hence this low decision latitude (control) could possibly lead to employees having job dissatisfaction. Thus these results suggest, for fire personnel, a sense of control over their work environment is important for their work and non work well-being as well as good Work Performance.

Overall, results of the cross sectional study partially support Hypothesis 2. The personality predictors Neuroticism and Extraversion together contributed significantly to the prediction of the outcome measures Work Competence and Work Aspiration. Neuroticism also contributed to the prediction of General mental health (context free well-being), but not to Job Satisfaction or Work Performance. Whereas the individual difference Mastery, contributed significantly to all the outcome measures.

Direct and Indirect coping had a main effect on Work Aspiration (supporting Parkes' findings) but not on Work Competence. Coping also did not contribute to the prediction of Job Satisfaction, General mental health or Work Performance.



This very limited finding for the influence of Coping on the outcome measures suggests that possibly the measures of Coping (Direct (problem focused) and Indirect (emotion focused)) used in the current study may not be the predominant Coping methods used by fire personnel. It is possible that fire personnel may be using other forms of Coping not addressed in the current study, such as social support (Regher et al., 2003; Cowman et al., 2004). Or it could be, as other previous researchers have suggested, that fire personnel use a combination of Coping methods depending on the situation. According to Parkes (1990), the use of a combination of Coping strategies, Indirect (suppression) and Direct, is likely to alleviate distress in a work setting than either form alone. Additionally, Parkes (1990) suggests the limited findings with regard to Coping could be due to constraints that are inherent in an organizational environment that may limit possibilities for constructive action by individuals, necessitating the uses of collective forms of Coping (e.g., Pearlin & Menaghan, Lieberman & Mullins, 1981; Shinn et al., 1984). That is, using more than one method of Coping, a combination of methods, in order to deal with the situation.

#### **9.3.2.2 Longitudinal data**

In the longitudinal data in chapter seven, Neuroticism was found to be a significant main effects predictor of General mental health, and Work Competence (as in the cross sectional data) but also of Work Performance. Neuroticism was not found to predict Job Satisfaction or Work Aspiration. That is low levels of Neuroticism were predictive of better General mental health, greater feelings of Work Competence and better Work Performance. But Extraversion was found to be a significant main effects predictor of Work Aspiration (as in the cross sectional data) but not of any of the other outcome measures. These findings can, as previously stated, be supported by the research of Watson and Clark (1984) who found that low NA individuals are more likely to feel secure and be satisfied with their environments and that high PA individuals view their environment in a more positive light. Possessing such affects could be suggested to result in better mental health and thus greater feelings of Work Competence and Work

Performance and higher Work Aspiration. However, the individual difference characteristic Mastery only predicted Job Satisfaction in the longitudinal data supporting Spector (1986); whereas in the cross sectional data it predicted all the outcome measures.

The above results taken together show that on a longitudinal basis, the personality characteristic Neuroticism predicts context free well-being (General mental health )and Work Performance as well as the Work Competence aspect of work well-being, but Extraversion only predicted Work Aspiration. But in the cross sectional data both the personality characteristics predicted work well-being measures (Work Aspiration and Work Competence) and Neuroticism predicted General mental health. This suggests that Extraversion has a stable influence on Work Aspiration both on a short term basis and over time, but not so for Work Competence. This would fit in with previous findings that indicate that positive affectivity and negative affectivity are not on opposite ends of the same continuum, but on two individual continuums (Watson and Tellegen, 1985; Brief et al. 1988). The current findings suggest having a low negative affect, over time predicts an individuals' Work Performance, General mental health and Work Competence.

The findings for Mastery on a longitudinal basis are very limited as it only predicted Job Satisfaction, compared the cross sectional data where it predicted all the outcomes. This could possibly be accounted (as stated before) due to the small size of the longitudinal sample and Time One outcomes being controlled for in the longitudinal analysis. Also it is possible that the influence of Mastery is not stable over time. However, all analyses clearly show the importance of Mastery for Job Satisfaction, and of positive affectivity for Aspiration and negative affectivity for Competence and context free well-being.

Coping however had no significant main effects with any of the outcome measures for the longitudinal sample. As already stated, this could be due to the fact that the measure of Coping in the current study- (Problem focused and Emotion focused Coping) may not be the form of Coping that Fire Service personnel use on a long term basis, but they may use other forms of Coping such as social support (Regher et al., 2003; Cowman et al.,



2004) or as explained by previous research by Pearlin et al., (1981) and Shinn et al., (1984) that constraints inherent in organizational environments limit possibilities for constructive action by individuals, necessitating the use of collective forms of Coping. It could possibly be, as suggested by other researchers, that some Coping strategies that are effective in domestic settings and marital settings may fail to alleviate distress in occupational settings or may alleviate stress only to a limited extent (Pearlin and Schooler, 1978; Menaghan and Merves, 1984; Shinn et al., 1984).

Together the cross sectional and longitudinal findings partially support Hypothesis Two.

**9.3.3 Hypothesis Three: The relationship between Uplifts and Hassles and Outcome measures will be moderated by Individual differences and Coping strategies ( e.g., Parkes (1990) suggests Main and moderator effects for Neuroticism and Coping).**

#### **9.3.3.1 Cross sectional data**

In terms of the interaction between the Hassles and Uplifts factors and Neuroticism, there were four significant effects reported in chapter six.

That is, Neuroticism moderated the relationship between Uplifts and Work Competence. This suggested there was a relationship between Uplifts and increased Work Competence only for those scoring high in Neuroticism. Additionally, Neuroticism also moderated the relationship between Hassles and Work Performance. This suggested there is a relationship between Uplifts and increased Work Performance for those with higher Neuroticism. Both these results are unexpected and it is not clear why this would be. Generically, Watson and Clark (1984) suggested NA centres on conscious, subjective experience rather than on an objective condition. That is, it emphasizes how people feel about themselves and their world rather than how effectively they may handle themselves in the world. Thus even though individuals may view the world in general negatively it

does not effect how competent they feel with respect to their job. However, this does not explain the above two findings specifically.

Neuroticism also moderated the relationship between Uplifts and General mental health, from these results it is not clear what the moderating effect is. There is a trend towards a relationship between Uplifts and poor General mental health for those high in Neuroticism, which is not as would be expected but it is not possible to draw any conclusions as both correlations were not significant. Whereas when Neuroticism moderated the relationship between Hassles and General mental health, these results suggested there is a stronger relationship Hassles and poor General mental health for those with high Neuroticism. This finding suggested that possibly Hassles has a stronger effect on individuals' General mental health than does Uplifts. This finding is in line with the premise that Costa and McCrae (1990) put forward, that individuals who score highly on Neuroticism (also known as trait negative affect) have a tendency to experience psychological distress and focus on the negative aspects of themselves and the environment.

With respect to the moderating effects of Extraversion, this was found to moderate the relationship between Hassles and Aspiration. The results suggested there is a stronger relationship between Hassles and decreased Aspiration for those with low Extraversion. The difference in findings for Extraversion and Neuroticism was supported by Parkes (2004), who indicated the importance of including both Extraversion and Neuroticism as moderator variables in research. She states that evidence suggests that over and above the main effects of Neuroticism and Extraversion, these dimensions may combine interactively to predict outcomes (Eysenck & Eysenck, 1985). Further support for this view is given by Claridge and Davis (2001) who cite experimental studies in which there are significant Neuroticism /Extraversion interactions.

In relation to the individual difference Mastery, this moderated the relationship between Uplifts and Aspiration. The results indicated there was a stronger relationship between Uplifts and increased Aspiration for those with low Mastery (control), (as a high score on



Mastery indicates low control). This result is not as would be expected and it is not clear why this could be. Mastery also moderated the relationship between Hassles and General mental health. This suggested that there is a relationship between Hassles and poorer General mental health for those with low Mastery (control). This would fit in with Karasek's model that a combination of low decision latitude (control) and heavy job demands is associated with mental strain (Karasek, 1979).

With regards the moderating effect of Coping on the link between Uplifts and Hassles and outcome measures, limited support for the findings reported by Parkes (1990) was observed. In the prediction of Job Satisfaction, Direct coping moderated the relationship between Hassles and Job Satisfaction. This suggested there was some evidence that there is a stronger relationship between Hassles and reduced Job Satisfaction for those using less Direct coping. There was also a single significant effect for the prediction of Work Aspiration where Indirect coping moderated the relationship between Uplifts and Aspiration. This suggested there was a relationship between Uplifts and increased Aspiration for those using less Indirect coping. These findings support the previous work of Pearlin et al. (1981) who said "Coping and supports benefit most those most in need" (pg.350). In their study, depression was predicted by a significant interaction between events indicative of job disruption and Coping responses. Other studies by Parasuraman and Cleek (1984) examined the role of Coping as a moderator variable; they found that the relation between work overload and affective distress was accentuated by the use of maladaptive Coping strategies. Similarly, Osipow and Davis (1988) showed moderating relations for four types of Coping resources, one of which (rational/cognitive strategies) was found to be maladaptive.

However, prior research could explain the limited support (in the current study) with regards Coping. Previous studies such as Pearlin et al., (1981) and Shinn et al., (1984) suggest there are organizational limitations as to the type of Coping an individual may use to cope as stated earlier. Other research, mentioned earlier (for example, Menaghan and Merves, 1984; Pearlin and Schloer, 1978) could also help explain the limited findings for Hypothesis Three.

### **9.3.3.2 Longitudinal data**

With respect to moderating effects of Individual Differences and Coping strategies found in chapter seven. Neuroticism moderated the relationship between Hassles and Aspiration indicating there is a stronger relationship between Hassles and decreased Work Aspiration for individuals with high Neuroticism. Previous research by Spielberger, Gorsuch and Lushene (1970) also viewed NA as a moderator of the of stress –outcome relationship; they considered NA to be a tendency to react adversely to social and psychological stressors. Furthermore, Parkes (1990) found an interaction between NA and work demands supporting the view of Spielberger et al., (1970) that NA predicts reactivity to social and psychological stressors. Other research by Parasuraman and Cleek (1984) has also found significant interactions between NA and work overload. These studies support the above findings of the role of NA as a moderator.

Neuroticism also moderated the relationship between Hassles and Competence. However neither of the correlations were significant, thus from these results it is not clear what the moderating effect is. However, there is a trend towards a relationship between Hassles and low Work Competence for those high in Neuroticism, but it is not possible to draw any conclusions as both correlations were not significant. This could again possibly be explained by the uncertain nature of the work fire fighters do. That is, possibly because even if they are highly trained in their job that negative affectivity does influence their feelings of job competency.

Extraversion had no moderating influence on any of the outcome measures.

Mastery moderated the relationship between Uplifts and Aspiration, which indicated there is a relationship between Uplifts and increased Aspiration for those with low Mastery (control). This was the same finding as for the cross sectional sample and is not as expected. This suggests control is important but in the opposite direction (i.e. low control is important). It is not clear why this would be.



Mastery also moderated the relationship between Hassles and Work Performance. These results suggested that there is a relationship between Hassles and reduced Work Performance for those with low Mastery (control). This finding supports Karasek (1979), who suggests when demands of a job are high and there is high control the individual will experience an increased motivation to perform.

There were no moderating effects from any of the predictor variables on Job Satisfaction and General mental health. There were also no moderating effects from Coping Strategies for any of the outcome measures. Again, this could be explained by previous research such as that by Pearlin et al. (1981); Shinn et al. (1984); Menaghan and Merves( 1984); Pearlin and Schlooer. (1978).

Overall, the results of the two sets of data gives only very limited support for the third hypothesis.

Overall, the results for these three hypotheses were inconsistent. But for the cross sectional data Uplifts and Hassles were good predictors of all the outcome measures, except for Work Competence, Mastery predicted all the outcomes and Extraversion and Neuroticism were good predictors of work well-being measures (Work Competence and Work Aspiration). However, the results for the longitudinal data were limited and less consistent and did not support findings of the cross sectional data. This could be due to the fact that as mentioned previously, the longitudinal data are based on a considerably smaller sample and the Time One measures were controlled for, thus reducing the influence of 'nuisance variables' that may have had an influence on the Time One outcome measures. Another possibility is that the proposed model may not be consistent over time and may be influenced by other factors such as interim effects and seasonal effects (De Lange et al., 2003).

The Path Analysis results will be used to address the final two hypotheses.

### **9.3.4 Hypothesis Four: Individual differences and Coping will have a mediating influence on the relationship between Hassles, Uplifts and each of the Outcome measures**

#### **9.3.4.1 Cross sectional data**

For the cross sectional analyses, please refer to Path Models in Figures 7.1-7.5 (Chapter 7).

Hassles and Uplifts have direct paths to all outcome measures except Competence. The direct paths from Hassles indicates low Hassles is related to high Job Satisfaction, Work Aspiration and Work Performance but the direct path to General mental health indicates high Hassles is related to poor General mental health. Whereas the direct paths from Uplifts indicates high Uplifts is related to high Job Satisfaction, Work Aspiration, and Work Performance but the direct path to General mental indicates low Uplifts is related to poor General mental health.

Mastery has direct paths to all outcome measures, indicating high Mastery is related to high Job Satisfaction, Work Aspiration, Work Competence, General mental health and Work Performance. Neuroticism and Extraversion have direct paths to both Competence and Aspiration, indicating low Neuroticism is related to good Work Aspiration and Work Competence and high Extraversion is also related to good Work Aspiration and Work Competence. Additionally, Neuroticism also has a direct path to General mental health, indicating high Neuroticism is related to poor General mental health and Extraversion has a direct path to Work Performance indicating high Extraversion is related to better Work Performance.

With regards to Coping, only Aspiration has a weak significant path from Direct and Indirect coping. This indicates Direct coping is related to high Aspiration and Indirect coping is related to low Aspiration.



With regards the indirect paths, only two outcome measures have indirect paths. Hassles has an indirect path via Neuroticism to General mental health. That is high Hassles leads to high Neuroticism and this results in poor General mental health. Additionally, Hassles has an indirect effect on Work Performance via Mastery. That is high Hassles leads to low Mastery and this leads to poor Work Performance. There were no significant indirect paths for Coping.

The indirect path via Mastery to Work Performance is supported by previous work of Firth–Cozens (1992) who suggests that the influence of psychological well-being on aspects of the stress process is mediated by pathways, which are behavioural and cognitive. According to Firth–Cozens (1992), the first pathway involves an increase in psychological well-being leading an individual to believe that one has greater control over his or her working environment, which in turn leads to more social support and fewer (quantitative workload) stressors. The second pathway involves a decrease in psychological well-being leading to an increase in the perception of stressors, which in turn leads to less social support and less control over the work environment. Thus according to Firth-Cozens' model, the important consequences of affective well-being are stressors, social support and perceived control.

The findings of the cross sectional data only gives very limited support for Hypothesis Four, as shown by the individual difference Neuroticism mediating the relationship between Hassles and General mental health and Mastery mediating the relationship between Hassles and Work Performance.

However, cross sectional data cannot imply causality, it can only suggest that there are mediating pathways. Additionally, cross sectional data cannot say anything about the causal order of the variables. Strong evidence for the causal order of the variables requires a longitudinal design (Taris and Kompier, 2003). The findings of the longitudinal data are described below. However, it is acknowledged that the Longitudinal data Path Analysis can only imply or give a stronger indication for causality but it does not confirm it. That is, it cannot state for definite that the path is 'causal'.

### **9.3.4.2 Longitudinal data**

For the Longitudinal analyses, please refer to Path Models in Figures 7.6-7.10 (Chapter 7).

The outcome measures; Job Satisfaction, Aspiration and Competence at Time Two have direct 'causal' paths from both Uplifts and Hassles at Time Two. That is high Uplifts and low Hassles is related to high Job Satisfaction, high Work Aspiration and Work Competence. With regards the dispositional characteristics, Neuroticism has direct 'causal' paths to Competence, General mental health and Work Performance at Time Two, that is high Neuroticism is related to low Competence, poor General mental and poor Work Performance. Whereas Extraversion only has a direct 'causal' path to Aspiration at Time Two, indicating high Extraversion is related to high Work Aspiration. Mastery only has a direct 'causal' path to Job Satisfaction at Time Two, indicating high Mastery is related to high Job Satisfaction. The finding with regards Mastery can again be supported by the findings of Firth-Cozens (1992) as described earlier.

With respect to the indirect 'causal' paths, none of the outcome measures, except General mental health, had significant indirect paths. Both Uplifts and Hassles at Time Two had indirect influences on General mental health at Time Two via Neuroticism. That is, the results suggest that low Uplifts leads to high Neuroticism (negative affectivity) and this results in poorer General mental health. Also that high Hassles leads to high Neuroticism and this leads to poorer General mental health. The evidence suggested that this was full mediation as there were no direct paths from Hassles and Uplifts to mental health (only via NA).

Additionally, there were no direct or indirect 'causal' paths from Coping to any of the outcome measures for the longitudinal data. This non significant finding for the longitudinal data, as well as the limited findings for the cross sectional data with respect to Coping could be accounted for by the type of Coping being measured in the current research. That is Emotion (Indirect) and Problem (Direct) focused Coping may not be the



types of Coping that Fire Service personnel use pre-dominantly. Or it could be, as Parkes (1990) suggests, due to organizational constraints limiting the possibilities for constructive action.

Overall, in terms of indirect effects, there were only two significant indirect paths for the cross sectional analyses with respect to Work Performance and General mental health and two significant indirect paths for the longitudinal analyses with respect to General mental health. Coping also had very little direct and indirect influence. Taken together the indirect paths in the cross sectional and longitudinal analyses give limited support to Hypothesis Four that individual differences have a mediating effect on the relationship between Uplifts and Hassles and the outcome measures. The only possible exception is Neuroticism acting as a mediator between sources of stress and General mental health

### **9.3.5 Hypothesis Five:**

**Time One Outcome measure will have an influence on the prediction models at Time Two (For example; Daniels and Guppy; 1997- suggest Time One Outcome measure influences Time Two Predictors).**

#### **9.3.5.1 LONGITUDINAL DATA**

Hypothesis Five is with reference to Path Models in Figures 7.6-7.10 (Chapter 7)

The Path models indicate there are direct 'causal' paths from Job Satisfaction, Aspiration and Competence at Time One to the Time Two predictor Uplifts, and also direct 'causal' paths from Job Satisfaction, Aspiration, General mental health and Work Performance at Time One to Hassles at Time Two. That is, there is a positive significant relationship between Job Satisfaction, Work Aspiration, Work Competence at Time One and Uplifts at Time Two and a negative relationship between Job Satisfaction, Work Aspiration General mental health and Work Performance at Time One and Hassles at Time Two.

This suggests that having high Job Satisfaction and high Work Aspiration and Work Competence at Time One (the three work well-being measures) has a 'causal' influence on how Uplifted an individual feels at Time Two. Similarly, having low Job Satisfaction, low Work Aspiration, low General mental health and low Work Performance at Time One has a 'causal' influence on how Hassled an individual feels at Time Two. These current findings are in line with previous work of Daniels and Guppy (1997); and Depue and Monroe (1986) who showed that well-being was the biggest predictor of subsequent well-being. Thus the current findings support the research of Daniels and Guppy (1994) who stated "cf page 1540 ... " it is conceivable small changes in psychological well-being, such as those observed in this study, propagate themselves, over time into larger changes in psychological well-being Zapf and Frese, (1988)".

Furthermore, all the outcome measures at Time One (Job Satisfaction, Aspiration, Competence, General mental health and Work Performance) have direct 'causal' paths to their equivalent outcome measures at Time Two. That is, there were significant positive relationships between the Time One outcome measures and their equivalent outcome measures at Time Two. Thus, having high Job Satisfaction, Work Aspiration, Work Competence, good General mental health and good Work Performance at Time One had a 'causal' influence on the Time Two measures being positive also (although the relationship was smaller for General mental health)

Thus the findings of the longitudinal data give support for Hypothesis Five.

The next section will aim to draw together the findings with respect to the various hypotheses in order to answer the broad aims of the current research.



## **9.4 OVERALL FINDINGS FOR EACH OF THE OUTCOME MEASURES**

The next section will address the overall findings for the three work well-being measures (Job Satisfaction, Competence and Aspiration), context free well-being (General mental health) and Work Performance and the relevance of findings to Fire personnel.

In the longitudinal HMRA the Time One outcomes were controlled for and this may explain differences in results between the longitudinal cross sectional data, as well as the large differences in percentages of the variances in the longitudinal compared to the cross sectional data.

As stated previously, according to Warr (1987, 1990), Aspiration and Competence can be used as measures of work well-being and Job Satisfaction can also be used as a measure of work well-being (Warr, 1994). Furthermore, Warr (1990) states, high or low mental health can be exhibited through behaviour in transaction with the environment, although such behaviours are conceptually distinct from feelings of affective well-being. These associations between behaviour and well-being can be observed through the two behavioural components; Aspiration and Competence.

Job Satisfaction however takes account of overall satisfaction an individual has in a job (that is both intrinsic and extrinsic aspects of a job) where as Aspiration and Competence are addressing an individuals' behaviour toward that job.

These three well-being measures will be discussed first.

### **9.4.1 JOB SATISFACTION**

In the current research the subscale means from both the longitudinal and cross sectional Job Satisfaction data, indicated participants were overall satisfied with their jobs. This is in line with Warr (1979). He stated that a score above 60 indicates an individual is

satisfied with their job. In the present study the cross sectional and longitudinal data had showed mean Job Satisfaction scores that can be compared to the findings of Warr, Cook, and Wall's (1979) post hoc sample of university graduates who reported a mean Job Satisfaction score of 74.61. Both Warr et al. (1979) and Clark et al. (1996) suggest generally most employees rate themselves to be fairly satisfied with their current job.

With respect to the Hierarchical Multiple Regression Analyses (HMRAs), the significant predictors of good Job Satisfaction in both the cross sectional and longitudinal samples were high Uplifts, low Hassles and high Mastery, although the influence of Mastery was weaker in the longitudinal sample. Since the same three variables (Uplifts, Hassles and Mastery) are predicting Job Satisfaction in the longitudinal data as well as in the cross sectional data, the findings of the longitudinal data gives stronger evidence that the influence of Uplifts, Hassles and Mastery on Job Satisfaction could be 'causal'.

Furthermore, HMRA results of the longitudinal data indicated that 78.2% ( 52.5% for the cross sectional) of the variance in Job Satisfaction was explained by the predictors. Thus, within the Fire Service, the results suggest that Job Satisfaction is determined by having fewer Hassles, more Uplifts and a sense of control over the work environment. The increased Uplifts and lower Hassles predicting Job Satisfaction (as mentioned previously), are supported by findings of Hart et al. (1995). They suggest that both positive and negative work experiences have to be taken into account in order to understand police officers psychological responses to work and Hart (1999) suggested that work Hassles and Uplifts contribute independently to Job Satisfaction. Research by Spector (1982, 1986) supports the current findings with respect to Mastery, as he found perceived high levels of control were significantly associated with Job Satisfaction and other job specific outcomes. Additionally, research by Warr, Cook, and Wall, (1979) and Clark et al. (1996) has also implied that perceived individual control is an important influence on individual job-related affective well-being in general. All these highlight the importance of Mastery with regards job –related well-being and thus support the current findings that Mastery (a sense of control) has a positive impact on having good Job Satisfaction.



Additionally, a closer examination of the individual item means for the Job Satisfaction scale for both the cross sectional and longitudinal data (please refer to chapter six, table 6.3 and chapter seven, table 7.2) indicates that the three items that gave the greatest Job Satisfaction in both samples were 'Amount of variety in job' 'Your immediate boss' and 'Your fellow workers'. The items that gave the least satisfaction with regards the jobs in Fire personnel were 'Industrial relations between management and workers at your work place'; 'Your rate of pay' (for both the cross sectional and longitudinal data) and 'Physical work conditions' (in the longitudinal data) and 'The way you are managed' (in the cross sectional data). These results suggest that for Fire personnel it is more 'individual' or personal level factors that give them the greatest satisfaction within their job. Whereas the more 'organisational' related factors are causing Fire personnel the greatest dissatisfaction with regards their jobs. These results also illustrate that the above findings were reflecting the current situation at the time for the Fire Service.

With regards moderating influences; in the cross sectional data the relationship between Hassles and Job Satisfaction was moderated by Direct coping but there were no moderating influences in the longitudinal data. This result implies for Fire personnel that there is a stronger relationship between Hassles and reduced Job Satisfaction for those using less Direct coping. Research by Pearlin et al., (1981); Parasuraman and Cleek (1984) and Osipow and Davis (1988 ) all found moderating influences of Coping in their studies, as described earlier.

The Path Analysis (for the cross sectional and longitudinal data) indicated for Job Satisfaction there were direct effects from Hassles, Uplifts and Mastery. Of these, Hassles has the strongest influence, and Mastery had the weakest influence. However, Job Satisfaction at Time One had a strong direct influence on Job Satisfaction at Time Two. But there were no indirect paths for Job Satisfaction. From these results, it seems that 'personality' has no influence, and that the sources of stress (Uplifts and Hassles) have the strongest influence on Job Satisfaction.

Overall, there was no evidence to suggest that individual differences fit better as moderators or mediators. Also, the HMRA and Path Analysis showed that the relationships for Job Satisfaction are generally main and direct effects.

#### **9.4.2 ASPIRATION**

In both the cross sectional and longitudinal data the mean scale values for Aspiration and Competence indicated that the respondents overall felt a reasonably Competent and Aspired within their jobs.

In terms of the factors that predicted high Aspiration, within the cross sectional data, the strongest predictors were low Neuroticism, high Extraversion, Mastery, Uplifts, Hassles and the use of Direct and Indirect coping. In the longitudinal data Extraversion, Uplifts (weaker of the two) were the only strong contributors to the prediction of high Aspiration at work. An examination of the HMRA for the longitudinal data showed that 79.8% (30.2% for the cross sectional) of the variance in Aspiration was explained by the predictors. Thus suggesting that within these Fire Service samples, Extraversion may be a dispositional characteristic that over time could predict high Aspiration at work.

As mentioned previously, in the current research, positive and negative affect are taken to be differentially related to Extraversion and Neuroticism (Costa and McCrae, 1980; Warr et al. 1983). With respect to the dispositional characteristics, in the cross sectional data Extraversion moderated the relationship between Hassles and Aspiration, implying that there is a strong relationship between Hassles and decreased Aspiration for those with low Extraversion. This is supported by findings ( for example Scheier and Carver, 1985; Carver et al., 1979, 1979b; Bandura and Cervone, 1983) who suggest having a generally positive disposition (positive affectivity) has a significant influence upon an individuals' general outlook, their perception of events and ultimately their health outcomes.

Furthermore, this finding regarding the influence of Extraversion ( positive affectivity) on work well-being has support from Brief et al. (1988 ); Parkes (1990); Chen and Spector



(1991) and Moyle (1995) who suggest that positive affectivity could have the same kind of influence that NA has on individual well-being.

In the longitudinal data Neuroticism moderated the relationship between Hassles and Aspiration. This implied that in the Fire Service there is a relationship between Hassles and decreased Aspiration for those with high Neuroticism. There is support for this finding from Spielberger, Gorsuch and Lushene (1970) who also viewed NA as a moderator of the stress-outcome relations.

In addition, in both the cross sectional and longitudinal data Mastery moderated the relationship between Uplifts and Aspiration. Thus giving strong evidence that in Fire Personnel there is a relationship between Uplifts and increased Aspiration for those with low Mastery (control). This is an unexpected finding and it is not clear why this would be. Also, Indirect coping moderated the relationship between Uplifts and Aspiration, which suggested there is a relationship between Uplifts and increased Aspiration for those using less Indirect coping.

Thus, these results indicate that all three individual difference factors; Extraversion, Neuroticism and Mastery may have moderating influences on Aspiration. However, the fact that Neuroticism and Mastery moderated the relationship with Aspiration in the longitudinal data implies their influence may be more stable over time. These results suggest that individual difference characteristics seem to be important moderators for Aspiration but only one (or two) out of ten possible moderator effects were found in each dataset.

In relation to Path analysis, for the cross sectional data there were direct effects from the sources of stress (Uplifts and Hassles), the individual difference characteristics (Neuroticism, Extraversion and Mastery) and both Direct and Indirect coping. Of these, the strongest influences were from Uplifts, Hassles and Mastery. For the longitudinal sample, there were direct effects from Uplifts and Extraversion on Aspiration and a weaker influence from Hassles also. In addition, Time One Aspiration had a direct

influence on Time Two Aspiration and a strong influence on Uplifts at Time Two and Hassles at Time Two. However, there were no indirect effect for the cross sectional nor longitudinal data. Thus Path Analysis indicates that for Aspiration, Uplifts and the disposition; Extraversion are important.

Taken together, the results suggest that of the individual differences, Neuroticism and Mastery may fit better as moderators than mediators. Overall, there is more evidence for a main and direct effects model

### **9.4.3 COMPETENCE**

With respect to Competence, in the cross-sectional data low Neuroticism and high Extraversion were the strongest predictors (with a weaker but significant contribution from Mastery) of high Competence. Whereas in the longitudinal data low Neuroticism and, unusually, low Uplifts were the strongest contributors to high Competence and 73.6% (19.8% for the cross sectional) of the variance in the longitudinal data for Competence was explained by the predictors. This finding suggests that over time, low Neuroticism (as this variable is common to both samples) may be a dispositional characteristic, which could predict high Competence in a job in this Fire Service sample. However, the unusual finding with respect to low Uplifts predicting high Competence could be (as explained earlier), due to the fact that fire personnel are very highly trained so that having fewer Uplifting experiences at work does not have a negative impact on how competent they feel with respect to their jobs.

Furthermore, Neuroticism moderated the relationship with Uplifts in the cross sectional data. This suggested that there was a relationship between Uplifts and increased Work Competence for those scoring high on Neuroticism. This is an unexpected finding and it is not clear why this would be. Also, Neuroticism moderated the relationship with Hassles in the longitudinal data. However, from these results it is not clear what the moderating effect is. However, there is a trend towards a relationship between Hassles and low Work Competence for those high in Neuroticism, but it is not possible to draw



any conclusions, as both correlations were not significant. These results imply that Neuroticism has some influence on how competent a person feels within their job.

The Path analysis results show for the neither cross sectional data that neither Uplifts nor Hassles had an influence on Work Competence. However, Neuroticism and Extraversion had stronger influences and Direct coping and Mastery had weak influences on Work Competence. With respect to the longitudinal data, Uplifts and Neuroticism had a strong influence on Work Competence at Time Two and a weaker influence from Hassles also. Additionally, Work Competence at Time One has an influence on Work Competence at Time Two as well as Uplifts at Time Two. There were no indirect paths for Work Competence for neither cross sectional nor longitudinal data.

Overall, the results suggest that the individual difference; Neuroticism which had the most influence for Competence and it fitted in better as a moderator, then a mediator.

However, the HMRA and Path analysis suggests for both Aspiration and Competence that the relationships are mainly main and direct effects in line with the other work well-being measure; Job Satisfaction.

#### **9.4.4 GENERAL MENTAL HEALTH**

The results for context free well-being are in contrast to the three measures of work well-being. According to the General Health Questionnaire (GHQ), which assesses General mental health, the subscale mean values for both cross sectional and longitudinal data are above the threshold. Hence, indicating a tendency towards psychiatric morbidity. The strongest predictors of poor General mental health in the cross sectional data were high Neuroticism, low Mastery and Hassles (with a weak contribution from low Uplifts) and in the longitudinal data, there were high Neuroticism (with a weak contribution from high Hassles). In the longitudinal data, 76.6% (39.2% for the cross sectional) of the variance was accounted for by the predictors. The fact that Neuroticism and Hassles are common to both datasets implies that their influence could be 'causal'. These findings are in line

with previous research that has shown high correlations between negative affectivity and general well-being as measured by Goldberg's (1972) General Health Questionnaire (Henderson et al., 1981; Payne and Jones, 1987; Janman et al., 1988).

An examination of General mental health for the cross sectional data indicates that Neuroticism moderated the relationship between Uplifts and General mental health. However, from these results it is not clear what the moderating effect is as both correlations were not significant. There is a trend towards a relationship between Uplifts and poor General mental health for those high in Neuroticism, which is not as would be expected but it is not possible to draw any conclusions. Also, Neuroticism moderated the relationship between Hassles and General mental health, indicating there is a relationship between Hassles and poorer General mental health for those scoring high on Neuroticism. But there were no moderating influences from the predictors on the outcome measures for the longitudinal sample. These results indicate the important influence of Neuroticism on General mental health.

The results of the longitudinal Path analysis gives even stronger evidence for Neuroticism being a 'causal' factor on the influence of General mental health. The Path analysis indicates for the cross sectional data, that Neuroticism and Mastery had direct effects on General mental health. Neuroticism also had a direct effect on General mental health in the longitudinal data. Additionally, General mental health at Time One had a strong direct influence on General mental health at Time Two and Hassles at Time Two.

With respect to indirect effects, Neuroticism mediated the relationship between Hassles and General mental health, for both the cross sectional and longitudinal data. That is, high Hassles leads to high Neuroticism and this leads to poorer General mental health. Neuroticism also mediated the relationship between Uplifts and General mental health for the longitudinal data. That is, low Uplifts leads to high Neuroticism (negative affectivity) and this results in poorer General mental health.



Since the current research was done during and after the consequences of the Fire Service strike, it is possible to say that the empirical evidence from Nelson, Cooper and Jackson (1995) is in support of the current quantitative findings. They found (in their study-of privatization of a major public sector company), that during periods of extreme upheaval and uncertainty, amongst other things, mental and physical health seems to decline significantly. Particularly, when the change is one that is outside their control and the implications and consequences of the change are less clear, as in privatization. This scenario/situation can be likened to the changes and restructuring that is happening in the Fire Service. That is, in the current research, the results indicated poor General mental health at both the cross sectional and longitudinal time points, and at the second time point the General mental health was poorer (that is the mean was higher than at the first time point). This suggests that mental health has worse since the time of the beginning of the restructuring, thus supporting Nelson et al. (1995) study.

Overall, the results give strong evidence that the influence of Neuroticism on General mental health may be 'causal'. Also, taken together, the results of the HMRA and Path analysis suggests for General mental health, there is a stronger mediating influence from Neuroticism on General mental health than a moderating influence. In fact, in the longitudinal Path analysis, the model was fully mediated, as Hassles and Uplifts had no direct effect on General mental health. Thus disposition may be more important for context free well-being than Uplifts and Hassles.

#### **9.4.5 WORK PERFORMANCE**

With regards the Work Performance of the Fire personnel the subscale means indicate that overall in (the cross sectional and the longitudinal) data, Work Performance was at a reasonable level. In the cross sectional data the strongest predictors were Uplifts, Hassles and Mastery (and the number of years of service) and in the longitudinal data the strongest predictor was Neuroticism and this explained 66.5% (21.1% for the cross sectional) of the variance in Work Performance.

However, in the cross sectional data, although Neuroticism was not a predictor it moderated the relationship between Uplifts and Work Performance. Thus implying, there is a relationship between Uplifts and Work Performance for those with higher Neuroticism. This is an unexpected finding and it is not clear why this would be. With respect to Work Performance, in the longitudinal data Mastery moderated the relationship between Hassles and Work Performance, thus implying there is a relationship between Hassles and reduced performance for those with low control. These results imply that both a sense of control and a tendency towards negative affectivity influence individuals Work Performance and that the influence of Mastery is possibly 'causal'.

Furthermore, the importance of Mastery (control) for good Work Performance is highlighted by Fisher's (1989) Discrepancy reduction model, which integrates both main and interactive effects of generalized perceived control. It suggests that control is beneficial since it allows the individual to reduce discrepancies between reality and the desired state of reality. Thus control buffers the effects of stressors upon well-being.

The Path analysis for the cross sectional data suggests there are direct influences from Uplifts, Hassles, Mastery and a weak influence from Extraversion. Additionally, there is an indirect effect via Mastery. That is, high Hassles leads to low Mastery and this leads to poor Work Performance. For the longitudinal data there are no indirect paths but there are direct paths from Work Performance at Time One on Work Performance at Time Two and Hassles at Time Two, as well as a direct effect of Neuroticism on Work Performance at Time Two.

Taken together the HMRA results and Path analysis initially suggested that Mastery is an important individual difference for Work Performance as it has both a moderating and mediating influence for the cross sectional data. However, ultimately Neuroticism was important as a predictor of Work Performance in the longitudinal path analysis (and as a moderator in the cross sectional sample).



Thus, for Work Performance Mastery and Neuroticism may be important individual differences, but again, the evidence generally supports a main effects model and there may be variables not included in the current model that are important in understanding Work Performance.

## **9.5 CONTRIBUTION TO KNOWLEDGE WITH RESPECT TO THE FIRE SERVICE SPECIFIC FINDINGS**

The results of the quantitative findings suggest good work well-being with respect to the outcomes Job Satisfaction, Work Aspiration, Work Competence and Work Performance. However, context free well-being indicated there was poor General mental health. This was further supported by the findings of the qualitative research (described below).

The findings of the qualitative research reflect the consequences of the strategic level interventions that the Fire Services were recommended to implement as a part of the restructuring and re-organisation of the Fire Services at a national level. That is, underlying the first Fire service strike in 25 years is a report put forward in December 2002; 'The Bain Report'. This report was the result of a three month review of the Fire service, which recommended how the Fire service should change in the future to meet the demands of the twenty first century. However, the Fire Brigades Union did not support the work of the Review, but this did not prevent the Review from carrying out what the Review 'body' put forward in the Bain Report. According to the Bain Report, there was much room for reform within the Fire service. The report indicated that the 'Fire service had to change. Also, that every aspect of its work had to be reformed to bring it into line with best practice at the start of the twenty first century'. According to this report, the Fire Service had fallen behind best practice in the public and private sector. The report stated that too many people die as a result of fires in the United Kingdom, that the UK does not compare well with other countries, and that little progress had been made in recent years in driving down the threat of fire and other accidents. Thus in order to

overcome these issues, the Bain Report proposed a list of recommendations for modernizing the Fire service.

Of all the reforms put forward, Pay was a major factor for the strikes. The report indicated that as the Fire Service operated when the review was written, the pay was comparable to people doing other sorts of jobs with the same weighting in the public and private sector. However if the Fire Service were to take on board the changes recommended, then there would be a pay rise once these changes were implemented.

The Bain Report resulted in the pay dispute and thus the Fire Service strike. This led to the publication of the White Paper in June 2003, which was informed by the Bain report. The White Paper put forward a 'vision' for the future of the public sector Fire and Rescue service. It re-iterated the recommendations put forward in the Bain Report, and 'laid the foundations for the modern Fire and Rescue Service for the twenty first century'. These are the reforms the government had set out that the Fire service should implement to be in line with "best practice". That is, the White Paper set out the governments 'vision' for the Fire service. As a result of the White paper, the Local and Communities Government (LCG) working with the Fire services put forward the 'National Framework Documents'. The National Framework is a strategic plan outlining how the Fire and Rescue Service can deliver its' public service agreement targets and other objectives set out by the government at a more local level. There have been several National Framework Documents; the first of these was published in 2004/2005. The most recent one was published in May 2008, it sets out the plan that the Fire Services are recommended to follow for the next three years, to 2011.

## **9.6 STRESS IN FIRE PERSONNEL**

With respect to stress in the Fire Service, overall the mean values for the subscale scores indicated higher Uplifts than Hassles scores, signifying that Fire personnel generally experienced more Uplifts in their working life. These mean values suggesting higher Uplifts (low stress) could be considered unusual, if taken in the context that the



quantitative research was carried out in the midst and aftermath of the strike and restructuring of the Fire Service. For example, the GHQ scores reflecting General mental health indicated that overall, Fire personnel had poor mental health (as the mean GHQ score was above the threshold). Additionally, the results of the qualitative survey also support the existence of stress amongst Fire Personnel.

However, a possible reason for the higher Uplifts scores, despite the poor mental health, is that the 'Daily Hassles and Uplifts scales' (Hart et al., 1993, 1994a) were used to measure 'Uplifts' (positive/beneficial to well-being) and 'Hassles' (negative/harmful to well-being) work experiences encountered on a day to day basis (Hart et al., 1995). Thus, it could be that the 'work itself' (that is, what the role entails) gives fire personnel Uplifts but other factors related to it (for example, organisational related factors) that are not actually a part of the work role specifically, may be the cause of the stress. This would fit in with the findings of the qualitative research which support the above the threshold GHQ scores, implying poor General mental health. That is, the qualitative research indicates there is stress in Fire Service personnel.

Furthermore, a closer examination of the item means of the Uplifts and Hassles scales indicates, the two items that caused the greatest Uplifts were 'Working hard' (for both cross sectional and longitudinal data) and 'Working with people I like' (in the longitudinal data) or 'Helping the public' (in the cross sectional data). The items that caused the least Uplifts were 'Dealing with fatalities' and 'Receiving good promotions rating', in both datasets. The fact that 'Receiving good promotions ratings' is associated with least Uplifts supports the results of the qualitative survey that suggested individuals felt they were not acknowledged for the work being done. The items that caused the greatest Hassles were 'Too much red tape to get things done' (in both cross sectional and longitudinal datasets) and 'Having no say in decisions that affect me' (in the longitudinal data) or 'Low morale' (in the cross sectional data). The items causing the least Hassles were 'Complaints by the public' (both datasets) and 'Going to dangerous calls' (in the longitudinal data) and 'Giving bad news' (in the cross sectional data). These results

indicate that it seems that organisationally based factors cause the greatest Hassle for Fire personnel.

## **9.6 THE FINDINGS OF THE QUALITATIVE RESEARCH**

One of the aims of the qualitative research was to help enrich the understanding of the quantitative results.

The results of the qualitative research suggest that there is stress in the Fire Services. In line with this, the quantitative results indicated increased Hassles predicted low Job Satisfaction and poor General mental health. Additionally, the findings of the General Health Questionnaire (GHQ) indicated that overall fire personnel had poorer General mental health (as the GHQ scores were above the threshold for good General mental health). In support of this, the qualitative research showed, when fire personnel were asked for specific 'causes of stress', the themes that arose were 'Not feeling valued', (this entailed personnel not feeling their contribution to work is not being measured, valued or acknowledged and that there are no rewards or praise for the work being done), 'Lack of communication; ( with regards decisions being made, withholding information about changes); and 'Uncertainty' (caused by lack of communication by management level to the 'shop floor' level about the changes, also where and why the changes are happening). 'Lack of sharing of information'(relating to people not knowing what is expected of them)' Lack of financial resources'(relating to for example, lack of money for training)'and 'Home-Work interface'(relating to individuals bringing their home/family problems to work). Thus the themes that caused stress, could be said to also negatively effect mental well-being. Therefore quantitative measure of context free well-being indicating the existence of poor mental health is supported by the themes from the qualitative research.

Other quantitative findings supported this also (please see chapter 6, table 6.4 and chapter 7, table 7.3), as an item level examination of the Uplifts scale revealed a factor that caused the least Uplifts was 'receiving good promotions'. Thus suggesting that fire



service personnel felt that despite the efforts they make at work, their work may not be acknowledged and rewarded. All these factors could result in individuals having stress as well as poor mental health. Also, with respect to Job Satisfaction (please refer to chapter six, table 6.3 and chapter seven, table 2) factors that were highlighted as causing least satisfaction were 'Industrial relations between management and workers at your workplace' and 'Your rate of pay'.

Furthermore, there were themes relating to stress and restructuring specifically. These were 'resistance to change' (relating to organisational and individual factors e.g. "more people doing more work, less people and no extra money") and 'pace of change' (e.g. "the pace of change has been high", "some have taken the change personally"). These factors were also specified by Fire personnel as causing stress.

Other factors pertaining to the change were also highlighted that indicated that changes had taken place but that Fire personnel felt this was not made aware to the general public and thus was not acknowledged by them. For example, the theme 'New identity for fire service and fire personnel'. This suggested that fire personnel felt that as a result of the restructuring and the huge organizational changes that had occurred, the 'new identity' of the fire service needed to be promoted. That is, they felt that the public, as well as those who want to join the Fire service, still had out dated ideas of what the Fire service and Fire personnel do based on the 'old' image; that is Fighting fires and attending road traffic accidents. Additionally, several participants felt that the kind of person who is now recruited to be a fire fighter has to have different qualities to someone who would have fitted the 'image' previously. Another theme indicating change had occurred was the theme 'Roles'. This is a broad theme, encompassing several sub themes. It indicated that some of the middle management level were 'got rid of' and different roles were created, as well as changes to roles (as with fire fighters). For example, the Sub theme 'Role Changes' entailed changing what individuals do within their job. For example, Fire fighters are now not called to put out fires. They now have to go and give talks to school children about fire prevention and have to fit fire alarms in the cause of reducing deaths due to fires. The ethos of the fire service now is not only putting out fires but also

preventing them in the first place. The overall feeling was that Fire personnel, although acknowledging a need for change, did not embrace it.

Other general themes that were high lighted that indicated unrest within the Fire Service as a result of the restructuring and the change were 'Communication', 'Lack of trust', 'Lack of control', 'Lack of Resources' all of these were also related to exacerbation of stress within the Fire services. Of these, 'Communication' was the factor that was highlighted as underlying a great deal of the 'unrest', dissatisfaction and stress, that is, lack of communication. This theme suggested that there was acknowledgement of the importance of communication within the Fire service and its importance between and within all levels. However, that Fire personnel felt there is lack of explanation as to what changes are being implemented as well as the reasons for them. Additionally, people who have this information deliberately not sharing it, thus breeding a culture of uncertainty. Thus the over riding feeling of lack of communication within the Fire Service.

Furthermore, the theme 'awareness of stress' points towards Fire personnel having an awareness of the influence of stress, both at an individual level, as well as an organizational level, for example through stress audits. However, the respondents acknowledge that perhaps awareness can still be raised as to the impact of stress, the issues relating to it and the cost to the organization, with respect to the quality of work that an individual who is 'stressed' can produce

## **9.7 INTERVENTIONS FOR THE FUTURE OF THE FIRE SERVICE:**

The second aim of the qualitative survey was to get the perspective of Fire personnel on support and intervention, which was not addressed earlier. It gave much fruitful information as to the forms of non formal support Fire personnel use and avenues for possible implementation of these.

With regards the support systems available to deal with stress, all the participants were aware of the counselling services and the Occupational Health Department as the two



most prevalent sources of support. Another theme that was highlighted was support from colleagues, which was not a 'formal' form of support available, but it was used by Fire personnel. However the knowledge base about the other formal forms of support available, varied greatly. Thus indicating it is possibly an area that the Fire Service can address for the future.

In addressing 'Improvement to support systems', a theme that was highlighted was to advertise and make support (counselling) more accessible. That is, to have support generically available, so that individuals can use it when and if they need it, rather than having to be referred to it and it being funded on an hourly rate. It was also suggested that another way support could be improved would be by making people aware of its availability and existence.

Another theme suggested a coaching and mentoring system would be an improvement to the support available, allowing individuals to verbalize their thoughts and concerns and get feedback on matters with regards the job but also other factors that pertain to the job that are an issue or are 'bothering' the individual. Another suggestion for improving the support system was a 'confidential talk' line whereby individuals were able to talk more freely about stress, that is, 'to discuss more openly and talk about and to understand'. It was suggested to make this an 'internal' service in the Fire Service but to ensure maintaining confidentiality of issues discussed as the top priority, as issues of confidentiality are a major concern for Fire personnel.

The qualitative survey also highlighted issues which Fire personnel felt would be beneficial for the future of the Fire Service and would improve it.

Respondents reiterated that to improve the Fire Service, the organization could improve communication. For example, decisions being made should be shared with all levels of staff and made explicit, explaining what is expected and the reasons for decisions. Additionally, introducing a formal method of coaching/mentoring, whereby individuals have a system of support and advice available if the need arises. Furthermore, a reward

system could be implemented to improve feelings of being valued and to show acknowledgement of staff efforts. For example, if an individual has had no sick leave for a year, to “offer them an extra days leave or a couple of duvet days”.

However, the issue that was most pertinent to respondents that the Fire Service needs to address was with regards the ‘New identity for the Fire Service and Fire personnel’. That is, the Fire Service as an organization needs to promote how the ethos and the ‘work’ of the Fire Service has changed since the restructuring. The findings indicated that most individuals were aware that the public and those who wanted to join the Fire Service still had out dated ideas of what the Fire Service and Fire personnel did based on the ‘old image’. That is, fighting fires and attending road traffic accidents. Also the kind of person who is recruited as a fire fighter now has different qualities to someone who would have been recruited previously. Thus, the research suggests that it is important for Fire personnel that the public are made aware that Fire fighters now have a different ethos encompassing educating the public and a preventative role, hence a more proactive and versatile role, requiring a different range of skills. This is something the Fire Service can take action on.

## **9.8 THE PROPOSED MODEL OF STRESS IN RELATION TO OTHER OCCUPATIONAL MODELS OF STRESS**

With regards the first aim of the quantitative research, i.e. examining the adaptation of Cooper (1986) and Williams and Cooper’s (1998) model of stress in the Fire Service, this will be addressed in this section. This section will attempt to bring together the results of the current research in relation to the proposed model of stress and compare it with existing models of stress.

At a very general level, the current research could be said to partially support Cooper (1986) and Williams and Cooper’s (1998) model of stress, from which the current proposed model is derived. That is, according to Williams and Cooper’s (1998) model,



the sources of pressure interact with the individual differences to produce the effects. In the current model the individual differences (Neuroticism and Mastery) had moderating effects both in the cross sectional (Aspiration, Competence and Work Performance) and longitudinal (Aspiration, Competence General mental health and Work Performance) data.

However, in the present research; Neuroticism also mediated the pathway between Hassles and General mental health, also a mediating pathway between Uplifts and General mental health and Mastery mediated the pathway between Hassles and Work Performance. Thus, it can be said that the proposed model of stress, at a very general level, does support Cooper (1986), and Williams and Cooper (1998) model, at least partially.

The current results were also found to give some support, indirectly to aspects of Warr's (1987, 1994) Affective Well-being Model based on an individual's perception of their personal well-being. That is, with respect to Warr's affective constructs of job related and context free well-being, the current research findings give support to this. For example, with respect to psychological well-being both Uplifts and Hassles were predictive of work well-being measures; Job Satisfaction and Aspiration but not Competence in the cross sectional data and only Job Satisfaction in the longitudinal data; whereas General mental health was predicted by both in the cross sectional data, but only Hassles predicted it in the longitudinal data. Similarly, in the cross sectional data, Neuroticism, Extraversion and Mastery predicted work well-being measures Aspiration and Competence but in the longitudinal data, Neuroticism predicted Competence and Extraversion predicted Aspiration.

Thus, giving indirect support to Warr's model (as well as Hart, 1999), regarding the importance of making a distinction between context free and domain specific aspects of affective well-being and conducting research on both aspects.

Additionally, Warr's (1987) model identified nine features essential for well-being. Within the current research it was found that some of these factors in Warr's model were identified as some of the most and least satisfying factors with respect to Job Satisfaction, those causing the most and least Uplifts and Hassles all having an impact on well-being (please refer to tables 6.3-6.5 pg 117-118 and tables 7.2-7.4; pg 147-148 ). Some of the factors in the Warr model that are relevant and that were found in the present research are "Opportunity for control" ( in Hassles scale-"Having no say in decisions that affect me"); "Opportunity for skill use" (in Job Satisfaction scale-"Amount OF Variety in your job"); "Opportunity for interpersonal contact"(in Uplifts scale-"Working with people I like" and Job Satisfaction scale "Your fellow workers"), and "Variety and availability of money" (in Job Satisfaction scale- "Your rate of pay") .

Furthermore, the current research findings also give some support to some aspects of the Hart et al., (1995) 'Model of Psychological Distress and Well –being'. That is, according to Hart's model, psychological distress and well-being are determined by two separate but independent (negative and positive affectivity) paths. The negative affectivity path is influenced by Neuroticism and the positive affectivity path is influenced by Extraversion, and this directly effects the use of problem focused Coping, experience of Uplifts and higher levels of well-being. For example, in the current research with respect to the prediction of high Aspiration, in the cross sectional data the strongest predictors were low Neuroticism, high Extraversion, Mastery, Uplifts and the use of Direct ( problem focused) Coping which supports the Hart et al. model.

This present research also attempted to address the influence of Coping on the stress process, but unfortunately, the results obtained were very limited and as such, no conclusions about the influence of Coping can be made. The non significant findings for the longitudinal data, as well as the limited findings for the cross sectional data with respect to Coping could be accounted for by the type of Coping being measured in the current research. That is, in the current research, Coping is measured by Direct (Problem focused) Coping, as via Accommodation, Changing the Situation and Symptom Reduction; and Indirect (Emotion Focused) Coping, via Devaluation, and Avoidance. The



limited findings could be, as suggested by Pearlin, Menaghan, Lieberman & Mullan (1981) and Shinn et al., (1984), due to constraints inherent in an organizational environment that may limit possibilities for constructive action by individuals, necessitating the use of collective forms of Coping(that is different methods of Coping). Alternatively, emotion and problem focused Coping may not be the methods of Coping used by fire personnel. There is also evidence for this from the qualitative research. This indicated, with respect to the themes 'support' from colleagues (both co-workers at the same level, as well those higher up at managerial level) that support was valuable. Thus, it maybe that Fire personnel use this type of support for Coping more than the types being measured in the current research.

This would fit in with the shift system incorporating the various 'watches' that Fire personnel work under and the 'community' feeling that is inherent within the Fire Service.

However, if getting support from colleagues is likened to 'social support' as given by the definition of Williams and House (1985). That is, according to Williams and House, (1985), 'social support' may be considered to be a flow of communication between people involving emotional concern, caring, information, as well as instrumental help. Furthermore, Henderson et al. (1981) has noted that there are two hypotheses reflecting the effects of social support. The first suggests that social support has a direct effect upon well-being. The second hypothesis, known as the buffering hypothesis, suggests that social support interacts with stressors, such that social support buffers the effects of stressors upon well-being. According to Daniels and Guppy (1994), both models indicate that some variable (worker control or social support) interacts with the stressors such that the effects of stressors upon well-being is lessened, and provides resources by which the nature of the stressors can be changed in order to lessen their impact. Thus, they suggest, since social support can provide a means of changing the environment, social support can be argued to represent, in some circumstances, an aspect of control. This control may be obtained by requesting and/or receiving help from others. (But they note those aspects of control related to social support may be distinct from worker control). Therefore, Daniels

and Guppy (1994) conclude that conditions which favour the perception of and use of control, facilitate effective problem-focused Coping since control allows the nature of the stressor to be changed. Furthermore, some Coping behaviours are directed at changing the environment. Folkman and Lazarus (1980) and Billings and Moos (1982) call this problem focused Coping. Latack (1986) refers to this type of Coping as 'control'. Additionally, social support has been found to be associated with problem focused Coping ( Kirmeyer, 1988).

In relation to this, it could be that Fire personnel are using a form of Problem focused Coping which the measures used in the current research may not have picked up. Thus, this area needs much further research.

Finally, Path analysis results of the current research gave support for the fact that how one is feeling about their job at one point in time may have an impact on their future experiences of, for example, for Hassles having low Job Satisfaction, work Aspiration, low General mental health and low Work Performance has an influence on how Hassled an individual feels at Time 2, this supports Daniels and Guppy, (1997). Unfortunately, none of the indirect paths from the Time One outcomes to the corresponding outcome measures at Time Two were significant, which would have illustrated a time lagged feedback mechanism. However, the fact that there were significant direct effects of Time One Outcome measures on Time Two Outcome measures is supported by previous work of, for example, Depue & Monroe (1986), who suggest well-being is the predictor of subsequent well-being.

The current proposed model gave some support for previous models as mentioned, the author believes the proposed model has contributed to knowledge. That is, the proposed model suggests the possibility for the existence of both moderating and mediating pathways for the individual difference variables. (For example, the Cooper model, suggests moderating influences of Neuroticism), the current research suggested a possible mediating pathway also. This was verified by the results of the longitudinal path analysis, which showed for General mental health, the model was fully mediated by Neuroticism.



Additionally, in the current research a measure of Extraversion (positive affectivity) is used as well as Mastery (for control), these are not measures that have been used in the Cooper models. Results indicated Mastery also had significant influences as a moderator and mediator in the stress process. The previous models which this model is based on, Cooper (1986) and Williams and Cooper (1998) models, did not incorporate both measures of stress (Uplifts and Hassles). That is, did not examine how day to day experience of positive (beneficial to well-being) and negative (harmful to well-being) work experiences may impact on stress, (Williams and Cooper, 1998 only used Hassles in their model). However, in the current research Coping showed very little or no influence in the Fire service sample, where as in the Cooper (1986) model this was included as it was thought to have an influence. This could be due to the measures of Coping used in the present research not being appropriate for measuring the type of Coping methods used by Fire personnel (as mentioned above) or that Coping per se is not something that is important for the stress process in Fire fighters.

In conclusion the current proposed model is unique in that it also incorporates the measures Uplifts and Hassles that suggests that daily work experiences have main and direct influences on an individuals' well-being. However, it also shows the possibility of both moderating and mediating pathways for the role of individual differences. Furthermore, it also opens up an avenue for further research for a better understanding for the role of Coping in the fire service. Finally, the proposed model shows that a model incorporating some aspects of each of these previous models mentioned could be relevant for the Fire Services.

Overall, the results show some support for the proposed model of stress.

## **9.9 STRENGTHS /LIMITATIONS OF THE RESEARCH**

This section of this chapter discusses a number of methodological issues that could have hindered establishing more conclusive evidence of well-being outcomes in the current research as well as stating the strengths of the research .

First, there are many confounding and ‘nuisance’ variables, which could have influenced an individuals’ well-being. Some of these have been explored by other researchers. For example, genetic influences (Eckenrode and Gore, 1990) and adverse life-style behavioural choices (excessive drinking and smoking etc.), lifestyle characteristics (Parkes, 1983,1987); financial/social class influences (Kessler and Cleary, 1980) and social support (Parkes, 1994).However, it is not possible or practical for all individual differences to be measured within one research study. It could be that a number of individual differences that have not been measured may well have influenced individual well-being to some degree (Lazarus, 1992) or possibly masked the effects on some outcomes.

Second, it is often difficult to establish longitudinal ‘causality’ between stress and outcome measures as any changes to outcomes over time needs time to take effect. For example, with respect to the current research, a factor that could possibly account for the overall limited findings for the longitudinal data, is time i.e. the lag between the Time One and Time Two waves. That is, despite the use of a panel design (where all variables were measured at both Time One and Time Two), the time lag between the first wave and the second wave of the research may not be sufficient to show any change. There is support for this from De Lange, Taris, Kompier, Houtman and Bongers (2003) who suggest a complete panel design is insufficient to demonstrate causal effects of variables over time, because the time lag has to be sufficient enough to detect any effects. In general they state there is little information available about the time lag that is needed for the causal variable to influence the effect variable (Taris and Kompier, 2003), and the recommendations concerning the length of the lime lag tends to be inconsistent. For



example, it has been recommended by Frese and Zapf (1988), in the absence of commonly accepted guidelines on the correct length of time lags, researchers should discuss their choice for a particular time lag in the light of the question of how the effect of X on Y develops over time. However, De Lange et al. (2003) acknowledge that in practice, the choice for a particular time lag is often motivated by the practical facilities of the research project or the time available to the researcher and the participants. But that such a consideration should be complemented with plausible theoretical and methodological arguments.

With regards the current research (as acknowledged by De Lange et al., 2003), the time lag between the first and second waves for the two longitudinal samples was determined by the Fire Services and the researcher had no influence over it. Furthermore, for the two samples, the time lag between finishing the first wave and starting the second wave was five to six months for one Fire Service and seven months for the other Fire Service. Limited findings could be because this time lag may not be enough to show any changes. Additionally, for both Fire Services, as the responses were slow to be sent back, they were collected over a four to five month period. Thus, possibly a longer time lag between the first and second waves may have been better and could have meant there was less 'saturation' with questionnaires and therefore possibly an increased and quicker response rate. According to Stone and Neale (1984) and Dewe (1991), a methodological solution to this is repeated sampling, whereby daily stressors are measured over short periods of time rather than repeated measures longitudinally. However, the current researcher is not sure whether this method would be appropriate for the current sample as repeating the measurement twice has already given low response rates.

Third, with regards to the qualitative research, the sample size was only six voluntary participants and all the participants were managerial level. Thus, this is likely to be a biased sample, in that the sample is not representative of the different strata of Fire Service personnel, as was hoped. However, an advantage of the participants all being at managerial level is that they may be expected to have an over view of the significant issues within the organization that affect personnel, as well as knowledge of pertinent

factors that may influence the operational side of the organization. Ideally, an improvement on this would have been if it were possible to have a sample representing fire personnel from all levels of the service and from both Fire Services who were part of the longitudinal study. Unfortunately, the researcher had no influence over how the sample was recruited, as it was requested by the contact in the Fire Service that they would do this. Additionally, only one of the Fire Services wanted to be a part of the study at that point.

Fourth, the rationale for using HMRA, incorporating a form of control for an earlier dependent measurement, is a recognized and valid technique for exploration of longitudinal data (Daniels, 1993; Parkes, 1994; Moyle, 1995, 1997). The reasoning behind this longitudinal technique is the fact that by controlling for the Time One outcome (criterion) variable, any subsequent significance achieved by analysis is due to changes existing within the Time Two dependent variable. However, one of the disadvantages of having used the hierarchical multiple regression for longitudinal analysis is that, due to the entry of these predictor variables, a large amount of the proportion of the variance within the outcome variable is likely to be automatically explained. Thus the technique tends naturally to produce large multiple R's, as in the current study (c.f. Brough, 1998). The various methods of longitudinal data analysis have been debated by various researchers (for example, Parkes, 1994; Zapf et al., 1996; Moyle, 1997) but there is no one method that has been recommended as the definite longitudinal technique. Nonetheless, the method utilized by the current research is one of the most widely reported techniques within the current literature.

Fifth, possibly a clearer definition of what comprises high work related mental well-being (Aspiration and Competence), and good Work Performance (for example, with 'cut off' or threshold values, as for Job Satisfaction), may have enabled more effective evaluation of the contribution of each. It is suggested by Lazarus (1992), that a more precise definition of what it actually is that is being measured will allow evaluation of changes against it.



Sixth, in the current study there were no Time course assumptions as recommended by Frese and Zapf (1988), whereby the variables should have been measured for the Fire Service before the strike happened, so that there would have been a comparison baseline. However, the Fire Service strike was an unexpected and unforeseen occurrence and happened a week before the fieldwork was due to begin. So this would not have been possible.

Finally, although the current research has taken account of Zapf et al.'s (1996) recommendation that within longitudinal research, all of the variables should be measured at all Time points, there is no control group within the study. Moyle (1997) has suggested that longitudinal research should attempt to include some form of control group(s), mainly for comparative purposes. Although this would be ideal, the current researcher feels that this would not have been practical for the current exploratory study. Especially, as there were many problems with Fire Services dropping out of the study after the first wave of data collection, as well as 'low response rates', and the fact that the Fire Services throughout the UK were going through change. Hence, it would be difficult to identify where such a sample would have existed.

Despite the limitations stated above, the current research has significant strengths that should be advocated and noted. First, there are relatively few published studies in the Fire Services compared to the other two emergency services (the police and ambulance service) in the UK. It is important that research be conducted in the Fire service as it is a high risk occupation that provides a vital service throughout the country. Thus the psychological well being of the employees of such an organisation is crucial and essential for its effective and efficient functioning.

Second, the current research is longitudinal and thus potentially allows for causal influences to be recognised. According to Zapf et al. (1996) longitudinal studies are useful to overcome problems of reversed causation and to control for third variables (e.g. social desirability and negative affectivity). The study is also a panel design, which allows for all variables to be measured at each time point and thus look for causal

influences. For example; 'causality' between stress and outcome measures can be assessed to see any changes to outcomes over time.

Third, another strength of the current research is that the sample is very large (N= 867) and there are very few studies of this size conducted on a longitudinal basis. The current author is not aware of another longitudinal study of this size and in England.

Additionally, the Fire services in the study were both from the South and North of England, thus there is greater scope for generalizability of findings.

Fourth, the current research was carried out at a unique time in the history of the Fire Services (at the beginning, during and after the strike). Thus although it is acknowledged that there are no baseline measures before the strike, the findings of the research could be built upon in future; whereby if the same measurements were taken in the future, there may be differences.

Fifth, the quantitative measures that were used were all standardized measures. The advantage of using standard measures is that one can compare findings to other samples e.g. other emergency services or other occupations. Thus there are standard measures from other studies such as those of Job Satisfaction and GHQ from Brown et al. (2002); Baker and Williams (2001) and Brough (2005) that could be examined for the purposes of comparison. Scores from these studies could possibly even be used as baseline measures of well-being in Fire personnel. The fact that the Fire service strike happened when it did, suggests that all was not well in the service and even if I had conducted part of the research before the strike at the time, it is possible that these findings would not have reflected the Fire service as it is normally operates.

Sixth, the current research utilised a mixed method approach whereby qualitative research methods were used to gain a greater understanding of the findings of the quantitative research. Furthermore, there are relatively few published studies that use qualitative research methods in the Fire service compared to quantitative research methods. The advantage of using the qualitative method in part of the current research



was it provided greater insight into the reasons behind the quantitative findings and possible solutions to difficulties in the Fire service. This level of detailed information would not have been possible if only the quantitative method was used.

Seventh, many of the findings supported previous models. For example, the current research findings supported Cooper (with respect to the importance of individual differences e.g. Neuroticism having a moderating effect); Warr (with respect to the distinction between work and context free well being) and Hart (with respect to positive and negative pathways). Thus suggesting that some aspects of these previous models are relevant to Fire personnel.

Finally, the implications of the current research findings for practice within the Fire service are valuable. For example; making counselling more available and advocating and advertising its availability, also introducing an anonymous chat line and possibly mentoring and coaching services that open avenues for employees to air their views. These kind of interventions arising from the current research findings help reduce levels of stress and increase well-being. Further research to investigate this would be valuable.

## **9.10 RECOMMENDATIONS FOR THE FIRE SERVICE**

Overall, the quantitative and qualitative findings suggest that it is not the direct job specific factors that seem to cause stress and dis-satisfaction in Fire Service personnel, it is more organizational level factors that have an impact on Fire personnel. For example, with respect to factors that caused the greatest Hassles “Too much red tape to get things done” “Having no say in decisions that affect me”. Whereas the factors that caused the greatest Uplifts were” Working hard” and “Working with people I like”. These quantitative findings are supported by qualitative research that also suggests that organizational factors cause stress for example, the themes that were related to causing stress were, ‘Not feeling valued’, ‘Uncertainty’, ‘Lack of sharing of information, ‘Lack of financial resources’ ‘Resistance to change’, and ‘Pace of change’. Furthermore, the qualitative findings indicated that the Fire Service personnel felt communication was a

problem, that is, there was a distinct “lack of communication” within and between the various tiers of the Fire Service. For example, the theme ‘Communication’ suggested that there was acknowledgement of the importance of communication within the Fire service and its importance between and within all levels. However, fire personnel felt there is a lack of explanation as to what changes are being implemented as well as the reasons for them. Additionally, people who have this information deliberately not sharing it thus breeding a culture of uncertainty. Thus this would be an area that the Fire Service could possibly address.

Additionally, poor General mental health was highlighted by the quantitative research and themes from the qualitative research also suggested there were factors causing stress that could affect an individuals’ General mental health for example, ‘not feeling valued’ and ‘uncertainty’. Thus, a more effective support systems could help improve General mental health (as suggested by the qualitative research). Thus possibly making counselling more available and more accessible may help. Another possible form of support could be ‘confidential chat’ that is a talk line whereby the individual is completely anonymous. Also, introducing a mentoring/ coaching system, whereby individuals can go to their mentors for support maybe useful.

There is some support for the above findings from the Health and Safety Executive, who have very recently published a document “Attendance management in the Fire and Rescue Service (2008)”. This indicates amongst other factors the importance of counselling (and welfare services) for maintaining performance and lowering sickness absence.

In order to increase Work Performance, introducing a reward system, whereby individuals are acknowledged for the good work they do, maybe considered. Also the possibility that managers become more proactive in acknowledging work on a day to day basis is recommended. This may also help improve General mental health.

Additionally, since there have been changes to roles, (particularly the role of a fire-fighter and various other roles have changed), the possibility of introducing a personality



inventory when assessing for a position in the Fire Service could be considered by the Fire Services. Especially, the fact that the individual differences Mastery and Neuroticism had some significant influences.

### **9.11 FUTURE RESEARCH:**

Future research could build on the current research by perhaps having a greater emphasis on qualitative methods. First, having a larger qualitative component within the research generically, for example, the qualitative study could also look at the aspects that were examined in the quantitative study such as Job Satisfaction and perceptions of Job Performance. Second, having a larger qualitative sample of 15-20 personnel would be interesting. Third, having the participation of more than one Fire service and having participants from all levels of strata in the sample would also make the findings more interesting.

Furthermore, the findings of the qualitative study highlighted the possibility of carry over effects of personal (home) problems to the work environment. Thus future research could address this area by looking at both the quantitative and qualitative aspects of Home-Work interface. There are a variety of measures of the home-work interface available (e.g. Warr, 1990) and semi structured interview questions could also address this area. Previous research (for example: Carver et al., 1989; Parkes; 1994 ) all support the influence of both personality and home – work factors such as abundant social support having some significance in the stress-coping process. In addition, in response to the increasing interest in positive psychology, potential positive aspects of the home-work interface such as facilitation and enrichment could be investigated and not just conflict (Grzywacz & Carlson, 2008).

The current research had limited findings with respect to Coping. This could be accounted for by the type of Coping being measured in the current research. That is, Coping is measured by Direct (Problem focused) Coping, via Accommodation, Changing the Situation and Symptom Reduction; and Indirect (Emotion Focused) Coping, via Devaluation, and Avoidance. However future research could build on the findings from the qualitative research, which suggested the use of ‘support’ from colleagues may be important. That is, ‘support’ from colleagues (both co-workers at the same level, as well those higher up at managerial level) was valuable. Thus, it maybe that Fire personnel use



this type of Coping more than the types being measured in the current research. Thus future research could possibly use other quantitative measures of Coping as suggested by the findings of the qualitative research (for example; the Ways of Coping Checklist (WCCL) by Lazarus and Folkman, 1993) .

As stated earlier, previous research, as well as the current research supports that certain individual differences do significantly influence well-being outcomes, (for example, Pearlin and Schooler, 1978; Weiss and Adler, 1984; Brief et al., 1988; Cooper and Payne, 1988; Folkman and Lazarus, 1988). The current findings suggest that Mastery and Neuroticism had some moderating and mediating influences. Thus, with respect to Neuroticism, possibly assessing the confounding influence of Negative Affectivity on the stress-Coping process as done by Brief et al. (1988) might be useful. This could also be done for Mastery, for example, Folkman et al. (1986a, 1986b), as previously mentioned, found that the presence of a sense of individual Mastery was found to independently influence both the individual's appraisal and Coping processes, and was also positively associated with increased general health. Thus possibly the Fire service could use this knowledge by looking out for and encouraging individuals with higher levels of Mastery at recruitment.

The qualitative research suggested that the 'old image of the Fire service and Fire – fighters' still remains. Research could also look into the 'macho' image that Fire-fighters have and how this image may influence the kind of individual that applies to be a Fire-fighter and how/ whether this fits in with what is required of a Fire fighter today. This would be useful especially since the implementation of changes to the Fire service has resulted in the requirement of very different qualities in Fire-fighters than previously.

Thus possibly, building on the results of the current research (that suggested the influence of low Neuroticism and high Mastery), future research could address whether these personality traits are prevalent in individuals who are successful in their application to become Fire-fighters today.

This could be done by assessing if Fire personnel who score high or low on Neuroticism or Mastery are high or low on the attributes the Fire service use to recruit Fire personnel.

According to the Fire service website:

The qualities that are assessed by The National Fire-fighter Questionnaire (NFQ), which is used to assess an applicant's attitude and motivation in relation to seven scales, each based on one of the Fire Service Personal Qualities and Attributes (PQAs), are:

1. **Working with Others** - works effectively with others both within the Fire Service and the community.
2. **Commitment to Diversity and Integrity** - understands and respects diversity and adopts a fair and ethical approach to others.
3. **Confidence and Resilience** - maintains a confident and resilient attitude in highly challenging situations.
4. **Commitment to Excellence** - adopts a conscientious and proactive approach to work to achieve and maintain excellent standards.
5. **Commitment to Development** - committed to and able to develop self and others.
6. **Situational Awareness** - maintains an active awareness of the environment to promote safe and effective working.
7. **Openness to Change** - is open to change and actively seeks to support it within the Fire Service and in the community.

It could help the Fire service in the future when recruiting Fire personnel, if there was a significant link between Neuroticism and/or Mastery and any of the seven attributes that are assessed by the Fire service.

Exploration of the influence of individual differences within the stress and Coping models, confirms the observation that these processes are multi-factored and of a highly complex nature (Lazarus, 1992) and that a number of variables may influence individual well-being. Some of these have been previously explored, for example, social support (Parkes, 1994), primary demographic characteristics (Gove, 1972; Guppy and Rick, 1994), genetic influences (Eckenrode and Gore, 1990), lifestyle characteristics (Parkes, 1983; 1987) and financial/social class influences (Kessler and Cleary, 1980). Further



investigation of other individual difference variables in the Fire service is an area to be investigated.

Additionally, multiple indicators could be used for both the assessment of stress and Coping, although with regards work well-being, this was done in the current study. For example the use of other methods of Coping, such as exercise (Kobasa, Maddi & Puccetti, 1982), could be explored, especially as it is assumed that Fire fighters need to be physically fit, or perhaps the use of more negative behaviours such as alcohol as a form of coping could be examined. Possibly for the measurement of stress, having a measure that also assesses stress per se, not only 'Daily Uplifts and Daily Hassles' may be useful. The use of multiple indicators has also been suggested by previous researchers and this would enable the stress process to be explored in greater detail ( Brief et al., 1988; Lazarus, 1992; Moyle, 1997). For example, Jones, O'Connor, Conner, McMillan and Ferguson, (2007) used quantitative daily diaries to examine the influence of daily experiences of work stress on daily exercise, snacking, smoking and alcohol consumption over four weeks.

Further research could also possibly address the differences between 'Wholetime' (full-time) and 'Retained'(part-time) Fire-fighters and also differences between the different strata of staff, for example operational and non operational staff such as management level and Fire-fighters. A similar study was done by Baker and Williams' (2001) who investigated fire personnel (78 fire –fighters; 39 from senior officer grade and 39 from 'watch member' grade; that is fire-fighters, leading fire-fighters and sub officers).They found that despite differences in ranks, fire personnel reported similar levels of organisational stress, self appraised problem solving and psychological distress amongst other findings. However their study was only cross sectional, thus possibly a longitudinal study of this nature would be interesting, especially to see the differences between Wholetime and Retained Fire personnel.

Finally, implementing and evaluating interventions would be of value to the Fire service. This could draw on the findings of the qualitative study that suggested for example that

having a 'coaching and mentoring system', and/or a 'reward system' and general acknowledgement of work being well done lower down the hierarchy may improve the psychological well being and moral in the Fire service. If a Fire service were amenable, this could be done on a longitudinal basis, taking measures of psychological well being both before and after the intervention had been introduced. For example; with respect to the Fire service that was part of the qualitative study, there were already a few individuals who had accessed a mentoring system 'externally' but it was suggested this should be made generic and to those at lower levels also. Thus if it were possible to introduce such a system at all levels of the Fire service and assess if there are improvements in General mental health, this could be a beneficial intervention. Another example might be announcing the introduction of a 'reward system' for no absences and seeing if there is a reduction in the number of absences at intervals of 6 months.

Therefore, there is much for future research to refine, improve on and build upon from the findings and the limitations and strengths of the current study.



## **9.12 CONCLUSION**

### **THE AIMS OF THE QUANTITATIVE RESEARCH WERE:**

- To contribute to the study of occupational stress by adapting Cooper's (1986) and Williams and Cooper's (1998) model to the Fire service.
- To identify factors that affect individual and organisational outcomes (with respect to well-being) in the Fire service.
- To contribute to the understanding of occupational stress by researching the specific influence of individual differences and Coping on the relationship between stressors and psychological well-being in the fire service.

### **THE AIMS OF THE QUALITATIVE RESEARCH WERE:**

- to explore further and gain a more in depth understanding of the findings of the quantitative survey completed by one of the Fire Services that were a part of the longitudinal study;
- to get the perspective of Fire service personnel on support and interventions that are available within the service and their suggestions for improvements.

In conclusion, the results of the current research partially support the proposed model of stress, in that Uplifts (positive work experiences) and Hassles (negative work experiences) have Main and Direct effects on most of the work outcome measures. Additionally, the research indicated that the individual difference characteristics; Neuroticism, Extraversion and Mastery, taken together, had main and direct effects and there was some evidence of their moderating and mediating influences on the outcome measures, although these findings were very limited. Unfortunately, the proposed model

did not indicate an influence of Coping in the stress process, for reasons mentioned previously.

In addition, the results of the present research did not conclusively indicate if the proposed model fitted better as a moderating or a mediating model. Thus all one can assume from the current research is that the proposed model may fit best as a Direct and Main effect model of stress, thus suggesting that stressors and individual differences have an impact on the outcome measures. A transactional process was assumed within the current research, emphasizing the continual feedback mechanism between the individual and their environment. Limitations of the current study may provide reasons as to why the findings were limited.

One aim of the qualitative research was to explore further and gain an in depth understanding of the findings of the quantitative research. The qualitative research indicated that, the causes of stress were both at an organizational level and at an individual level, although there is some overlap between these two areas. The individual level factors, were to do with the person (related to lack of communication), such as feelings of not being valued, uncertainty, lack of sharing of information, and issues related to home –work interface. The organizational level factors were related to issues such as lack of financial resources and the restructuring, that also encompassed, for example, issues linked to lack of communication and uncertainty but also issues connected with resistance to change and pace of change. Hence, including the qualitative aspect to the current research has enriched the understanding and has helped explain and verify findings of the quantitative research

From a theoretical viewpoint, the current research highlighted areas where much further research is needed. For example, the expected influence of Coping on the outcome measures was very limited, suggesting the measures used in the current research may not be sensitive to the Coping methods used by Fire personnel. The reasons for these have been discussed earlier.



Finally, the qualitative study both enriched the findings of the quantitative survey and gave possible avenues for intervention, which the Fire Service could implement in order to improve and make more available the support for its employees.

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APPENDIX ONE

QUESTIONNAIRE

Part 1: Statistical Information.

The first part of this questionnaire is to obtain data for *statistical comparison only*.  
PLEASE REPLY TO ALL THE ITEMS.

	COMPLETE BOX
Which category of staff applies to you? (Please tick one of the boxes opposite)	Sub-Officer and below [ ] Station Officer and above [ ] Support Staff [ ]
Please indicate gender by ticking one of the boxes	[ ] Female [ ] Male
What is your age?	[ ] Years [ ] Months
What is your length of service?	[ ] Years [ ] Months
What is your current domestic status?	[ ] Married (living with spouse)
(Tick a box)	[ ] Not married (but in a steady relationship)
	[ ] Divorced or Separated
	[ ] Widowed
	[ ] Single
Do you have any dependent children?	[ ] Yes [ ] No
(If YES please specify how many and how old)	No of dependent children: ..... Ages .....
What is your height? .....	What is your weight? .....

Part 2: Life at Work.

a) Job Satisfaction

The following statements ask about how *generally satisfied* you feel with various aspects of your current job. PLEASE REPLY TO ALL THE ITEMS.

Circle your choice for each item

	Extremely dissatisfied	Very dissatisfied	Moderately dissatisfied	Not sure	Moderately Satisfied	Very Satisfied	Extremely Satisfied
1. The physical working conditions	1	2	3	4	5	6	7
2. The freedom to choose your own method of working	1	2	3	4	5	6	7
3. Your fellow workers	1	2	3	4	5	6	7
4. The recognition you get for good work	1	2	3	4	5	6	7
5. Your immediate boss	1	2	3	4	5	6	7
6. The amount of responsibility you are given	1	2	3	4	5	6	7
7. Your rate of pay	1	2	3	4	5	6	7
8. Your opportunity to use your own abilities	1	2	3	4	5	6	7
9. Industrial relations between management and workers at your workplace	1	2	3	4	5	6	7
10. Your chance for promotion / self development	1	2	3	4	5	6	7
11. The way you are managed	1	2	3	4	5	6	7
12. The attention paid to suggestions you make	1	2	3	4	5	6	7
13. Your hours of work	1	2	3	4	5	6	7
14. The amount of variety in your job	1	2	3	4	5	6	7
15. Your job security	1	2	3	4	5	6	7



**b) The Fire-Service Daily Uplifts Scale**

This section asks about the most likely items which have been found to make fire service personnel 'feel good'. Indicate on the table below *the extent to which you believe each item has made you feel good during the past month of fire-service work*. PLEASE REPLY TO ALL THE ITEMS.

RESPONSE CHOICES				
0 DEFINITELY DOES NOT apply to me	1 PROBABLY DOES NOT apply to me	2 NOT SURE	3 PROBABLY DOES apply to me	4 DEFINITELY applies to me

Place your response choice (0, 1, 2, 3, or 4) in the ANSWER column next to each item:

ITEMS	ANSWER:	ITEMS	ANSWER:
Mobilising to an incident		Providing support to operational activity	
Helping the public		Public showing interest in my work	
Working hard		Meeting deadlines for everyday activities	
Receiving good promotions ratings		Support for my work from my colleagues	
Dealing with fatalities		Equipment being available and working	
Receiving a good performance rating		Good Roster / Shift pattern	
Helpful supervision		Having others to turn to for help or advice	
Getting along with peers		Working with people I like	
Making decisions		Responsibility for others	

**c) The Fire-Service Daily Hassles Scale**

This section asks about the most likely items which have been found to 'bother or hassle' fire officers. Indicate on the table below *the extent to which you believe each item has hassled or bothered you during the past month of fire-service work*. PLEASE REPLY TO ALL THE ITEMS.

RESPONSE CHOICES				
0 DEFINITELY DOES NOT apply to me	1 PROBABLY DOES NOT apply to me	2 NOT SURE	3 PROBABLY DOES apply to me	4 DEFINITELY applies to me

Place your response choice (0, 1, 2, 3, or 4) in the ANSWER column next to each item:

ITEMS	ANSWER:	ITEMS	ANSWER:
Dealing with fatalities		Giving bad news	
Problems with co-workers		Working with incompetent people	
Studying (for work purposes)		Going to dangerous calls	
Having no say in decisions that affect me		Not receiving recognition for a job well done	
Excessive paperwork		Too much red tape to get something done	
Too much work to do		Work interfering with meals	
Dealing with people who abuse the fire service		Dealing with other people's problems	
Too much supervision		Unfair promotions system	
Low morale		Poor facilities	
Lack or failure of equipment		Complaints by the public	

**d) Important aspects of work**

Please list below the most important aspects of your work that:

- i.

make you feel good about your work: .....

.....
- ii.

cause you to be upset or stressed: .....

.....

**e) Coping at Work**

For each of the items, tick the alternative of your choice, indicating how often you use the following Coping techniques for your life at work

Circle your response choice for each item on the table:

ITEMS	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
1. I try to change the situation to get what I want.	1	2	3	4	5
2. I make an effort to change my expectations.	1	2	3	4	5
3. I tell myself that the problem is unimportant.	1	2	3	4	5
4. I try to turn my attention away from the problem.	1	2	3	4	5
5. I try to let off steam.	1	2	3	4	5
6. I talk to someone about how I am feeling.	1	2	3	4	5
7. I focus my efforts on changing the situation.	1	2	3	4	5
8. I try to adjust my expectations to meet the situation	1	2	3	4	5
9. I tell myself the problem isn't so serious after all.	1	2	3	4	5
10. I try to keep my mind off the problem.	1	2	3	4	5
11. I try to relieve my tension somehow.	1	2	3	4	5
12. I accept sympathy and understanding from someone.	1	2	3	4	5
13. I work on changing the situation to get what I want.	1	2	3	4	5
14. I try to adjust my own standards.	1	2	3	4	5
15. I tell myself that the problem isn't such a big deal after all.	1	2	3	4	5
16. I try to avoid thinking about the problem.	1	2	3	4	5
17. I try to just get it off my chest.	1	2	3	4	5
18. I ask a relative or friend I respect for advice.	1	2	3	4	5

**f) Work Performance**

The next section concerns how you perceive your Work Performance has been over the last 3 months.

Please answer all of the questions by circling the item of your choice.

Items	Noticeably Worse	Somewhat Worse	About the Same	Somewhat Better	Noticeably Better
1. Your attendance at work.	1	2	3	4	5
2. Your overall Work Performance.	1	2	3	4	5
3. Your relationship with your colleagues.	1	2	3	4	5
4. Your time keeping.	1	2	3	4	5
5. Your relationship with your supervisors & managers.	1	2	3	4	5



g) Work Attitudes

These questions ask about how things have been going in the *past few weeks* in your job.  
PLEASE REPLY TO ALL THE ITEMS.

Circle your response choice for each item on the table:

ITEMS	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I can do my job well	1	2	3	4	5
2. I sometimes think that I am not very competent at my job	1	2	3	4	5
3. I can deal with just about any problem in my job	1	2	3	4	5
4. In my job I often have trouble Coping	1	2	3	4	5
5. In my job I like to set myself challenging targets	1	2	3	4	5
6. I am not interested in my job	1	2	3	4	5
7. I enjoy doing new things in my job	1	2	3	4	5
8. I am not very concerned how things turn out in my job	1	2	3	4	5
9. After I leave work, I keep worrying about job problems	1	2	3	4	5
10. I find it difficult to unwind at the end of a work-day	1	2	3	4	5
11. I feel used up at the end of a work-day	1	2	3	4	5
12. My job makes me feel quite exhausted at the end of a work-day	1	2	3	4	5
13. I have little control over the things that happen to me at work	1	2	3	4	5
14. There is little I can do to change many of the important things in my life at work	1	2	3	4	5
15. What happens to me in the future at work mostly depends on me.	1	2	3	4	5

Part 3: General Attitudes.

a) Emotional Perception

This questionnaire concerns the degree to which you feel you are able to spot the emotions you and other people are feeling. Please read each question carefully and then circle around a number for each item on the table to show your answer.

Circle your response choice for each item on the table:

ITEMS	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. It's fairly easy for me to express feelings	1	2	3	4	5
2. I'm in touch with my emotions	1	2	3	4	5
3. It's hard for me to share my deep feelings with others	1	2	3	4	5
4. It's hard to express my intimate feelings	1	2	3	4	5
5. I'm aware of the way I feel	1	2	3	4	5
6. Even when upset, I'm aware of what's happening to me	1	2	3	4	5
7. It's hard for me to describe my feelings	1	2	3	4	5
8. I can see when a friend is angry with me just by looking at them	1	2	3	4	5
9. I am very aware of when other people are feeling nervous or embarrassed in public.	1	2	3	4	5
10. I can tell a lot about what a person is experiencing by looking at their facial expression	1	2	3	4	5
11. I am able to tell whether someone is anxious or not just by observing their body language.	1	2	3	4	5
12. I can tell people who are shy amongst strangers.	1	2	3	4	5
13. In any social situation, I know who wants to be the centre of attention.	1	2	3	4	5
14. When someone smiles at me, I can tell whether it is false or really meant.	1	2	3	4	5

**b) How you generally feel and behave.**

Try to decide which response option below best represents your usual way of acting or feeling. There are no right or wrong answers, your immediate reaction is what we want.

*Circle your response on the table for each item:*

ITEMS	ALMOST NEVER	QUITE SELDOM	QUITE OFTEN	ALMOST ALWAYS
1 Does your mood go up and down?	1	2	3	4
2. Do you feel “just miserable” for no good reason?	1	2	3	4
3. Are you troubled about feelings of guilt?	1	2	3	4
4. Would you call yourself tense or “highly strung”?	1	2	3	4
5. Do you suffer from sleeplessness?	1	2	3	4
6. Do you like plenty of excitement and bustle around you?	1	2	3	4
7. Are you rather lively?	1	2	3	4
8. Do you like mixing with people?	1	2	3	4
9. Would you call yourself happy-go-lucky?	1	2	3	4
10. Can you let yourself go and enjoy yourself a lot at a lively party?	1	2	3	4

**Part 4: General Health.**

This part of the questionnaire is concerned with your general state of health over the *last few weeks*.  
PLEASE REPLY TO ALL THE ITEMS.

*Circle your response choice for each item on the table:*

HAVE YOU RECENTLY:-	CIRCLE YOUR CHOICE			
1. Been able to concentrate on whatever you are doing?	Better than usual	Same as usual	Less than usual	Much less than usual
2. Been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
3. Felt that you were playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
4. Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
5. Felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
6. Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
7. Been able to face up to your problems?	More so than usual	Same as usual	Less able than usual	Much less able
8. Felt that you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
9. Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
10. Been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
11. Been feeling reasonably happy all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual
12. Been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual



Part 5: Fire-Service Specifics.

This final section asks about your opinions of the welfare provision in this Fire-Service.  
(Reminder: All responses are STRICTLY CONFIDENTIAL). PLEASE REPLY TO ALL THE ITEMS.

a) In order to assist with improving the stress/welfare support within this Fire-Service, please rate how valuable you think the following kinds of support may realistically be:

Circle your response choice for each item on the table:

Items:	Very valuable	Valuable	Little value	No Value At all	No opinion
Line Manager	5	4	3	2	1
Colleagues	5	4	3	2	1
Critical incident debriefing	5	4	3	2	1
Confidential support line/counselling	5	4	3	2	1
Peer stress counsellor sessions	5	4	3	2	1
Physical fitness provision/s	5	4	3	2	1
Social room/bar	5	4	3	2	1
Any other suggestions? (Please specify....)					

(b) In terms of absenteeism from work during the last 6 months, approximately how many days have you been absent due to sickness etc. (Please specify number of DAYS)

.....

.....

(c) How many of these absent days in the last 6 months were due, in some extent, to any stress-related problems?

(Please specify number of DAYS) .....

.....

FOLLOW-UP QUESTIONNAIRE

This survey will be repeated in a few months. In order to match responses across the surveys (while ensuring anonymity) we would appreciate it if you could specify two PERSONAL PASSWORDS in the boxes below.

Mother's Maiden Name	House Number
.....	.....

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE RETURN IT IN THE FREEPOST ENVELOPE PROVIDED.

## **FIRST WAVE COVER LETTER**

School of Health and Social Sciences

Dear Participant,

My name is Kanchi Gunaratna and I am a PhD student at Middlesex University I am undertaking doctoral research in the area of psychological well-being among emergency service workers. This is an independent piece of research . It forms a part of the continuing research programme in occupational health and safety at Middlesex University. My supervisor, Professor Andrew Guppy, was one of the authors of the Health and Safety Executive reports on the management of Post-traumatic Stress in the workplace and we are hoping to extend this research through my programme.

This survey is based on successful projects with several police forces (e.g. Metropolitan Police and Gloucestershire Constabulary) and the British Army.

The purpose of this survey is to address well-being issues related to work to help the organisation develop appropriate systems of staff support. In order to do this, all staff at \*\*\*\*\* Fire & Rescue Service are being asked to complete this survey.

Clearly such research can have benefits for participating organisations. In the past, our work has resulted in those aspects of work which are associated with employee problems were identified and rectified. Similarly, from guidelines identified by the Health and Safety Executive, such research exercises can be seen as good practice in monitoring the well-being of employees.

The research involves completing the surveys twice over the next 6-12 months. As has been the case in all our previous research, all participation will be voluntary. The information gathered will be treated with the strictest confidence and anonymity of the participants will be maintained at all times. The information will be used solely for academic and research purposes. The Middlesex University Psychology Department's ethics Committee has reviewed and approved this research.

The findings from the research will be feedback to the organisation and to staff in order to provide suggestions for enhancing support services for those working in \*\*\*\*\* Fire & Rescue Service.

I would be grateful if you could complete the survey, place it in the FREEPOST envelope provided (this is to ensure anonymity) and return it directly to Middlesex University

If you have any queries or anything else you may want to discuss in considering participation in the research, please do not hesitate to contact the researchers at Middlesex University.

Professor Andrew Guppy 020 8411 5343, email: [a.guppy@mdx.ac.uk](mailto:a.guppy@mdx.ac.uk)  
Ms Kanchi Gunaratna 020 8411 5343, email: [kanchifireserv@hotmail.com](mailto:kanchifireserv@hotmail.com)

Thank you for your time and co-operation.

Yours sincerely,

Prof. Andrew Guppy - Supervisor

Ms K Gunaratna BSc MSc - Researcher

Middlesex University, Queensway, Enfield, Middlesex, EN3 4SA.  
Tel: 020 8411 5000 Fax: 020 8411 6538



## SECOND WAVE COVER LETTER

Dear Service Personnel

We have been undertaking research within your Service, regarding levels of Stress and overall Job Satisfaction with all Service personnel. This research has been completely independent and was started 4 years ago. It is being collected as the research data for a PhD, however it is hoped that it will give senior management a good indication of how staff throughout the Service feel in their roles and the areas that may need attention.

The first stage of the research was carried out about a few months ago, within your Service, when survey packs were distributed to all areas of the Fire Service. We have now collated the responses and this is now the second wave of the research. The findings of the research will be fed back to \*\*\*\*\* Fire Service after both surveys have been completed.

### **AS BEFORE PLEASE NOTE:**

We have been in liaison with Occupational Health regarding the organisation of the research within the Service, however complete confidentiality will be maintained at all times and the individual survey data will only be seen by the named researchers at Middlesex University. All research will be presented as statistical summaries. Absolutely no individual will be identified at any time throughout the research.

Although completing these second wave of questionnaires is down to personal choice, it would be appreciated greatly, if as many people could take the time to complete it as possible. We would very much like to improve on the numbers from our initial survey. Please complete this questionnaire if you can, even if you did not participate in the earlier survey. There will also be a chance to participate in focus groups after the second survey to give me an insight into what qualities makes you the unique individuals that make up the Fire service.

The findings will be fed back to the Fire Service at all management levels, who in turn will disseminate it to their departments and Stations. Thus it is guaranteed the data will not be lost, but findings be made aware to the \*\*\*\*\* Fire Service. A summary of findings will also be widely available.

It is a chance for both uniformed staff and support staff to make known how they really feel while their anonymity is maintained. The survey will be carried out at least one more time to get a reliable picture and not just one point in time.

We will wait until as long as possible after the survey goes out before collating the data but please we do ask participants to return the surveys in the Freepost envelopes provided, as soon as possible. Senior management have stated that **YOU WILL BE ALLOWED TO COMPLETE THE SURVEY WITHIN WORK TIME AT THE DISCRETION OF YOUR LINE MANAGER.**

Thank you for your time and co-operation.

Ms Kanchi Gunaratna-Researcher  
Prof Andrew Guppy-Supervisor  
Dr Nicky Payne-Supervisor

## **INFORMED CONSENT FORM**

This consent form is to check that you are happy with the information you have been provided about the study, that you are aware of your rights as a participant to confirm that you wish to take part in the study.

1. Have you read the covering letter? YES/NO
2. Do you understand the objectives of the research? YES/NO
3. Do you understand that you are free to refuse to answer any question?  
YES/NO
4. Do you understand that you may withdraw from the research at any time without giving your reasons and that this will not affect you in anyway? YES/NO
5. Do you agree to take part in this research? YES/NO

Any Comments:

Thank You,

Research Contact: Kanchi Gunaratna  
kanchifireserv@hotmail.com



## **APPENDIX TWO**

### **QUALITATIVE INTERVIEW**

#### **SUBJECT INFORMATION:**

**SUBJECT NUMBER:**

**POSITION AND TITLE:**

#### **INTERVIEW QUESTIONS:**

**1. Now you've had a chance to see the report what are your overall views on it?**

*Probe for different aspects as they arise to get fuller explanation.*

**2. Thinking about your role within the organisation, can you tell me in what ways, if any your role has changed since the survey was completed?**

*If changed, Probe: How role has changed and what the effects of the change(s) is/are*

**3 a. Within your specific role can I ask you to reflect on what gives you the greatest uplift (ie: makes you happy, contented).**

*Probe what do you feel creates this?*

**3 b. Within your specific role can I ask you to reflect on what gives you the greatest Hassles (ie: stressed).**

*Probe what do you feel creates this?*

**4. What do you think are the most important causes of Hassles (stress) in general in Fire service personnel?**

**5. What support systems and/or services if any are in place to support employees?**

*Probe: Which ones and what are your thoughts on them?*

*Probe: Do you think there/these are sufficient support systems for addressing individual concerns.*

*Probe: if so how?*

**6 a In your opinion are there any ways that these support systems and or services could be improved upon?**

*Probe Are there any support systems that are more successful than others would you say?*

*And any that are less successful in your opinion?*

**6 b. In your opinion what other support systems and or services could the organisation implement that could help with the work/stress problem?**

**7 Tell me about the restructuring in the Fire service in relation to stress at work?**

*Probe: Do you think it has had an impact on stress ? If so how ?*

**8. In your opinion what are the major issues that the fire service are now facing and what steps are important for the future, to improve the FS?**

**9. Are there are any other issues you would like to raise that I may not have touched on?**

***THANK YOU FOR YOUR TIME AND AGREEING TO BE A PART OF THIS STUDY***



## **INFORMATION SHEET**

### **JOB SATISFACTION AND PSYCHOLOGICAL WELL BEING SURVEY**

You are being invited to take part in the final part of the research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve, so please read the following information carefully.

The research aims to examine fire service personnel's views on the Psychological well being and Job Satisfaction report given to the \*\*\*\*\* Fire service and fire service personnel's positive and negative experiences in relation to life at work and outside of work. The research will involve a semi-structured interview lasting approximately 30-45 minutes of your time. This interview will be tape recorded.

Participation in this research is entirely voluntary. You do not have to take part. If you decide to take part you may withdraw at any time without giving a reason. You will be asked to sign a consent form prior to the interview which will also be signed by the researcher and the main Supervisor of the research. In signing this consent form you are ensured complete anonymity and that the tape recording of your interview will only be available to the researcher and her supervision team at Middlesex University only.

The data you provide will remain completely confidential and anonymous. Thus no individual's contribution will be identifiable. The data may be used for the purpose of publication in academic journals.

The Middlesex Psychology Department's Ethics Committee have reviewed and accepted this research proposal.

If you have any questions or concerns at any point before, during or after completion of this interview, please do not hesitate to contact me (details below).

***Thank you for your time.***

**Kanchi Gunaratna**  
Psychology, Middlesex University, Queensway, Enfield, Middlesex, EN3 4SF.  
E-mail: kanchifire@hotmail.co.uk

## **INFORMED CONSENT FORM**

This consent form is to check that you are happy with the information you have been provided about the study, that you are aware of your rights as a participant and to confirm that you wish to take part in the study.

1. Have you read the participant information sheet? YES/NO
2. Do you understand the objective of the interview? YES/NO
3. Do you understand that you are free to refuse to answer any question?  
YES/NO
4. Do you understand that you may withdraw from the research at any time without giving your reasons and that this will not affect you in anyway? YES/NO
5. Do you understand that the content of your interview and the tape recording of the interview will remain completely confidential and anonymous and will only be available to the research team at Middlesex University? YES/NO
6. Do you agree to take part in this research? YES/NO

Thank You,

This consent form guarantees complete confidentiality and anonymity  
Signatures:

Supervisor: Prof. Andrew Guppy

Researcher: Kanchi Gunaratna  
kanchifire@hotmail.co.uk

Participant